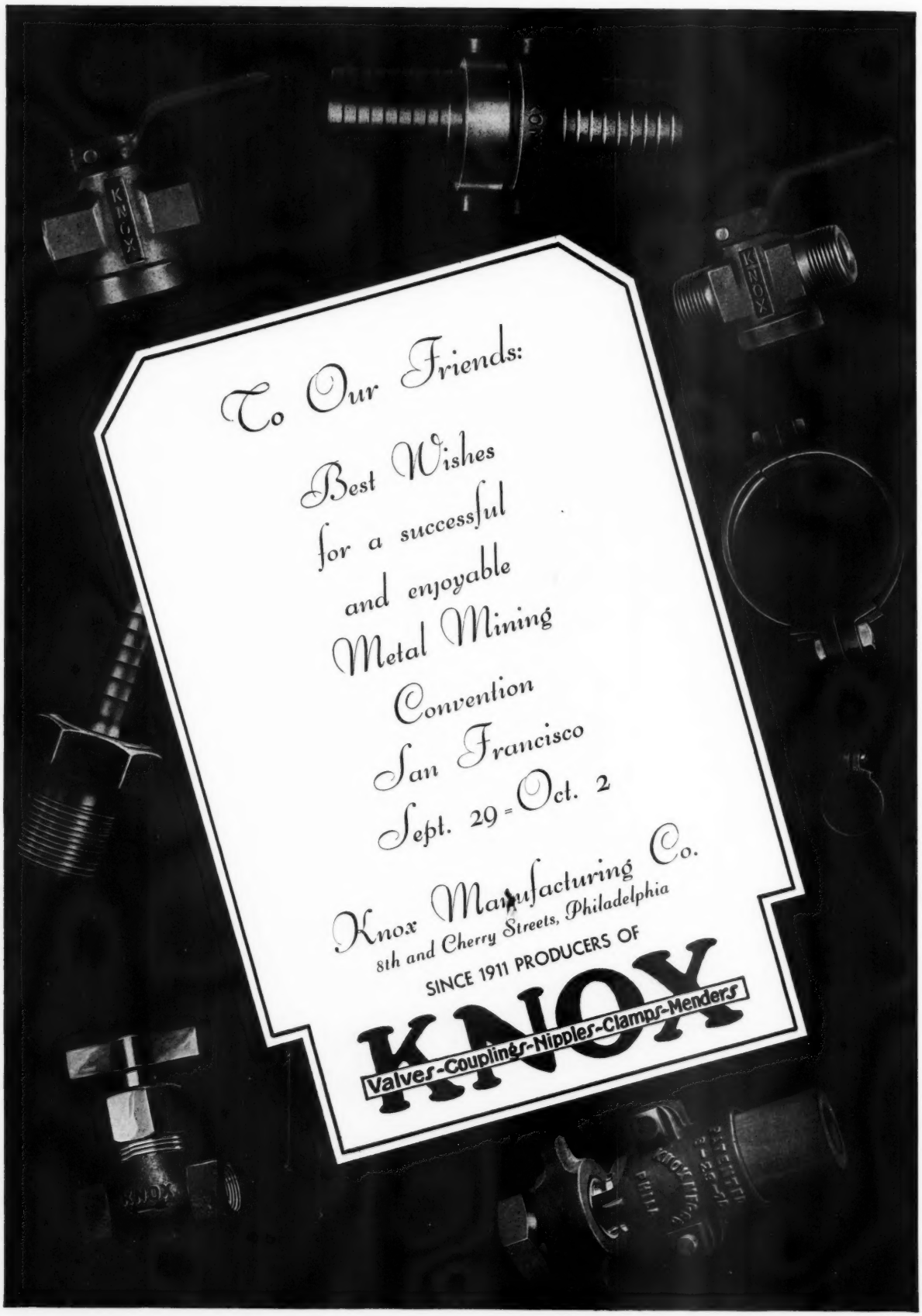
MINING CONGRESS JOURNAL


To Our Friends:
Best Wishes
for a successful
and enjoyable
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Convention
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Sept. 29 - Oct. 2
Knox Manufacturing Co.
8th and Cherry Streets, Philadelphia
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MINING CONGRESS JOURNAL

Vol. 27 SEPTEMBER, 1941 No. 9

As you read this you should already have your plans made to be in San Francisco on September 29 to October 2 to participate in what promises to be one of the most important Metal Mining Conventions ever held. Complete announcements and details in this issue.

Developments at the Yellow Pine mine in Idaho, as described here this month, give promise that the property will soon be one of the major tungsten producers of the country.

At Washington State College, research has been carried on for several years on electro-metallurgical processes for the production of metallic magnesium from ores. Now under the direction of the U. S. Bureau of Mines this research has resulted in a process successful in the pilot-plant stage which may soon result in establishment of large commercial plants. Dean Drucker tells about it.

Donald A. Callahan, President, Lexington Mining Company, states clearly and cogently the case of the mining industry opposing the leasing system of public lands advocated by Secretary Ickes of the Department of the Interior.

You'll be interested, too, in the other major articles and features completing this Convention Issue.

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Opinions expressed by authors within these pages are their own, and do not necessarily represent those of the American Mining Congress

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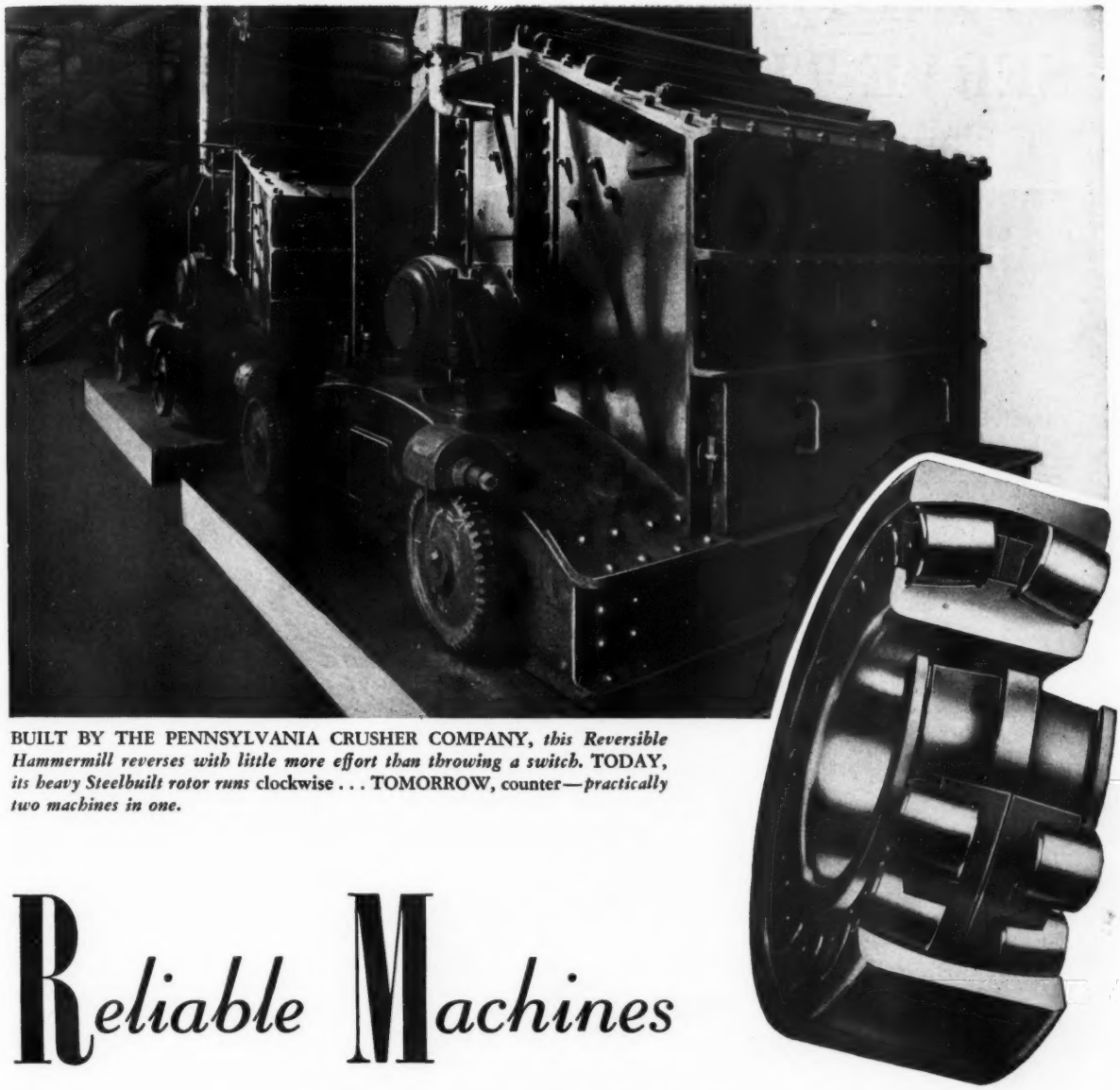

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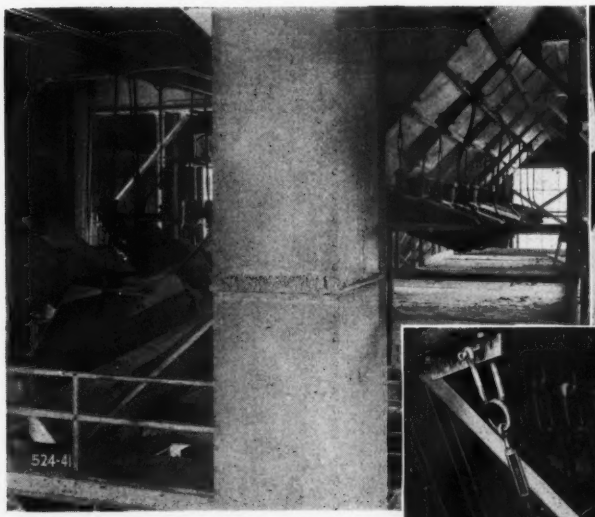
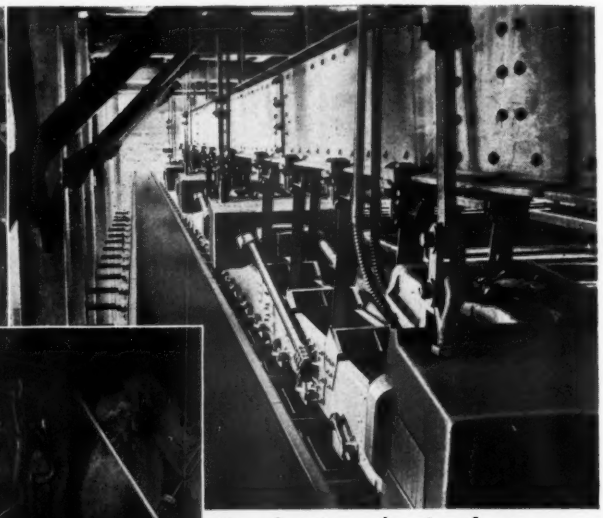
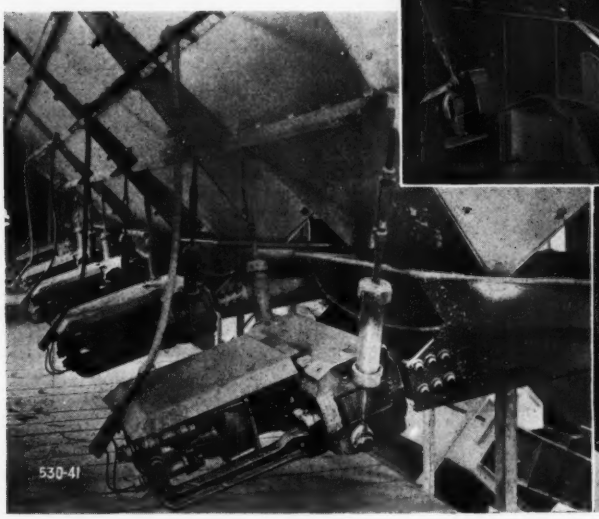


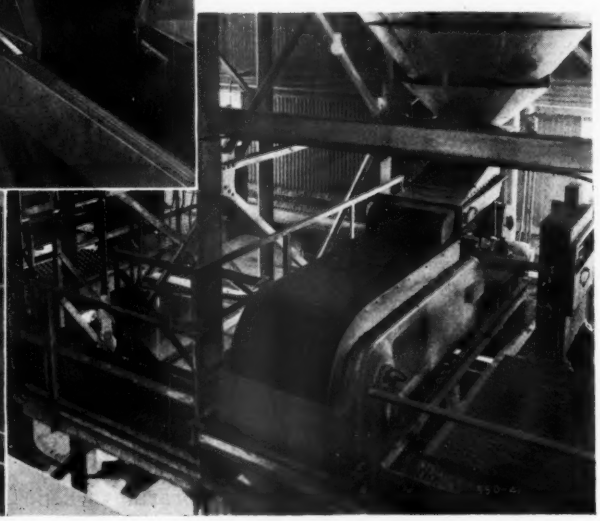
J-T electric vibrating feeders discharging to J-T conveyanscreens for by-passing fines ahead of secondary crusher.



Reverberatory charging furnace conveyor equipped with 22 quick-acting discharge gates.



Group of J-T electric vibrating feeders discharging to secondary crushers—feeders from few pounds per hour up to 1800 T. P. H.



Battery of Waytrols for proportioning finished potash —Waytrols from 60 lbs. per hour up to 600 T. P. H.

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(right)

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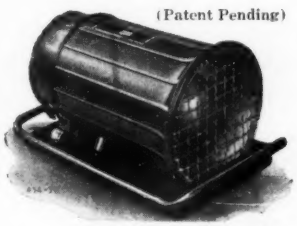
(Patent Pending)



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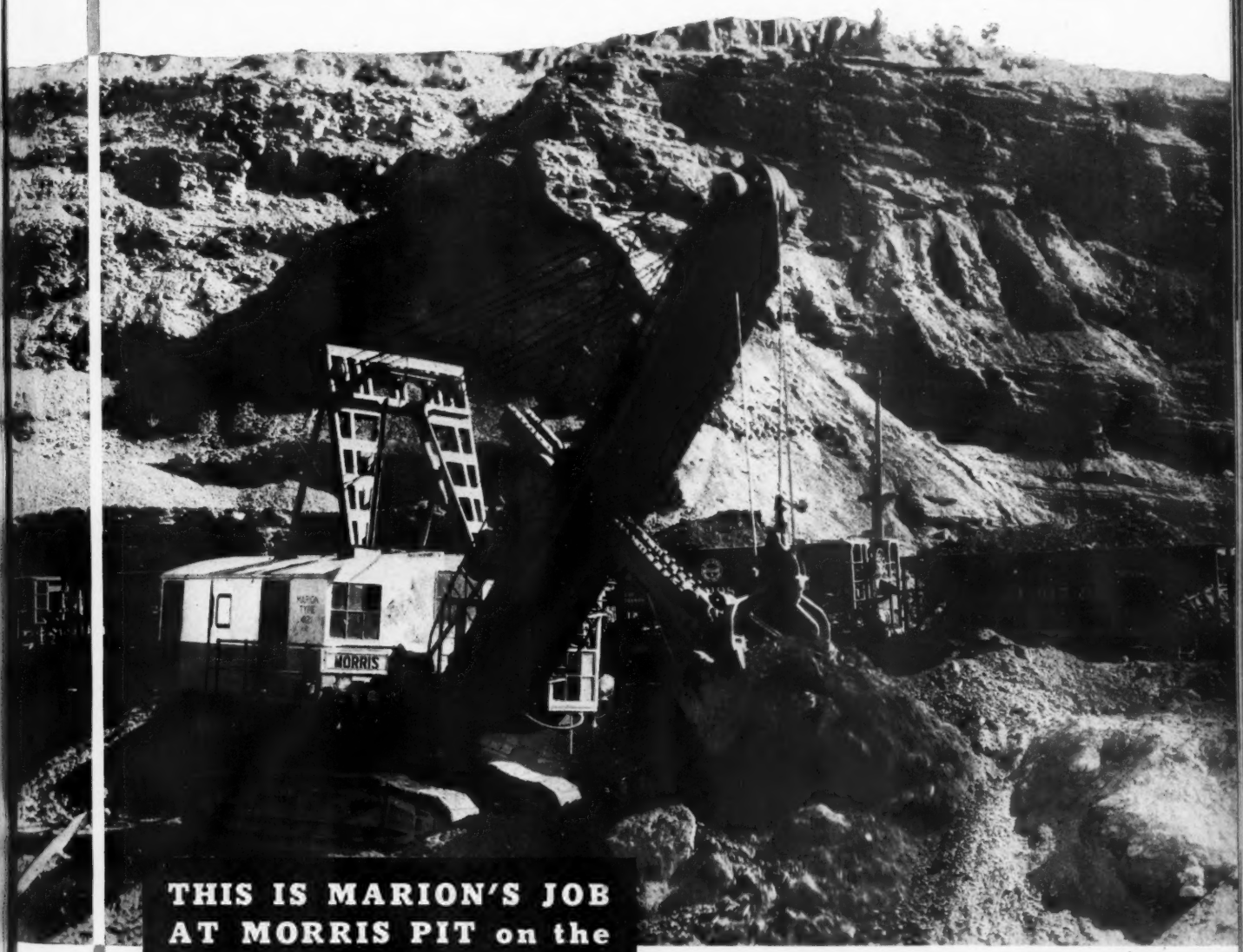

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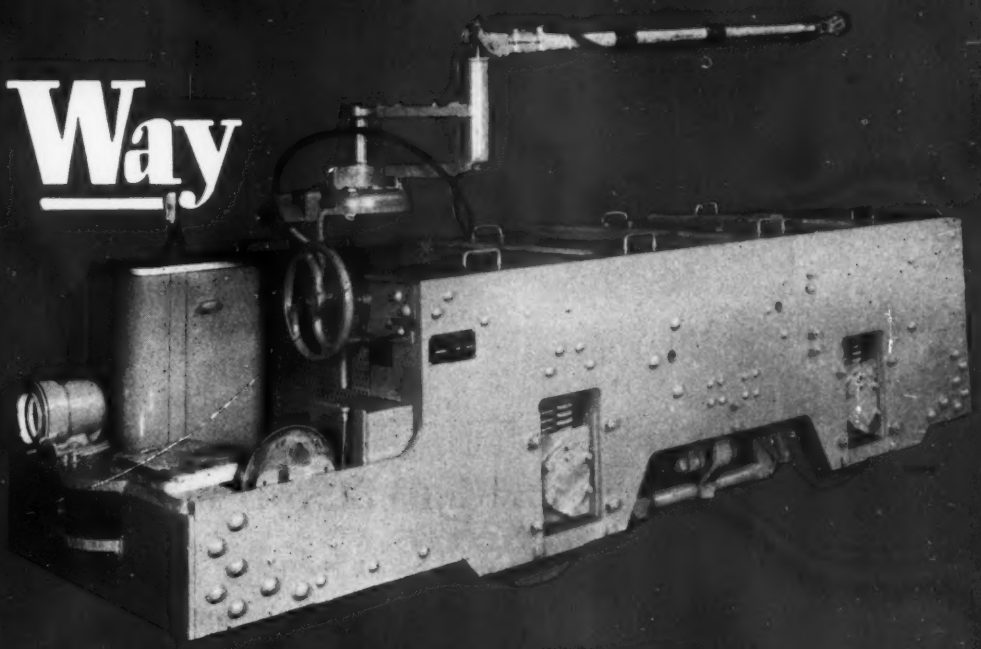

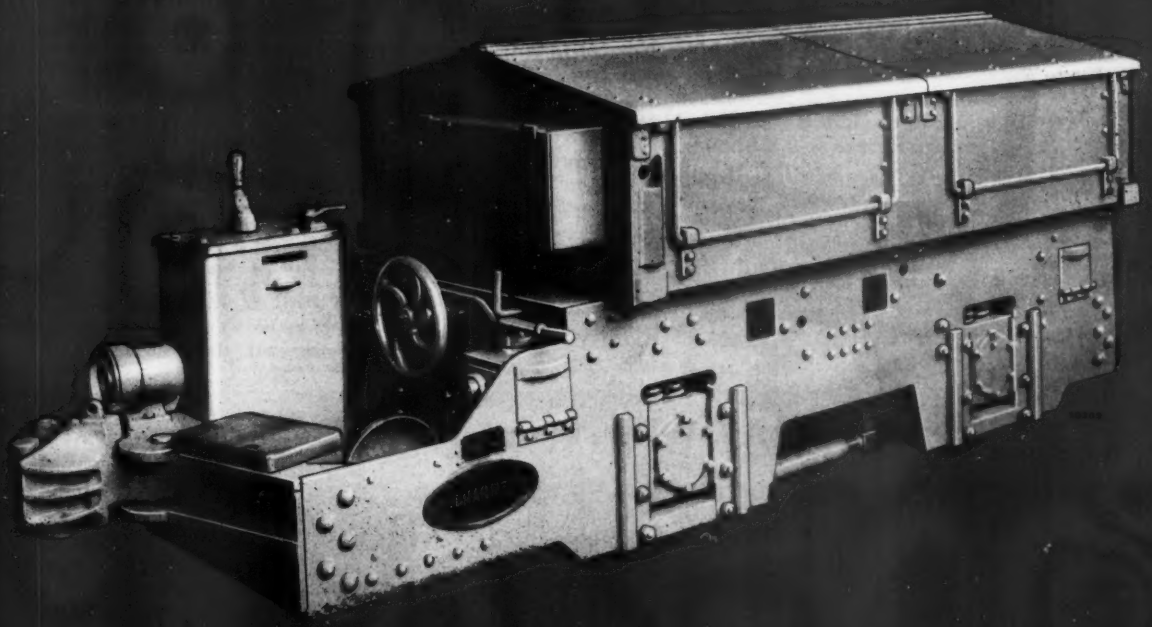

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A JOURNAL FOR THE ENTIRE MINING INDUSTRY—PUBLISHED BY THE AMERICAN MINING CONGRESS

MINING CONGRESS JOURNAL

RUSSELL C. FLEMING
Editor

Vol. 27 SEPTEMBER, 1941 No. 9

METALS FOR DEFENSE

The Metal Mining Convention of the American Mining Congress at San Francisco this month will highlight the fact that the United States is really getting into its stride in the production of Metals for Defense.

Copper, lead and zinc will all be produced this year to the full extent of production capacity. To September 1, iron ore shipments on the Great Lakes were 51½ million long tons, over 13 million greater than for the corresponding period last year. Mercury production is now meeting domestic demands, according to the latest figures. Manganese, chrome and tungsten production are mounting materially, although not to the extent desirable. Demand for other vital metals is being met in whole or substantial part. An A-3 Preference Rating for mining machinery manufacturers has in considerable measure cleared the way for procurement of equipment needed.

The mining industry is straining every effort to meet the emergency, for the sinews of defense are made of metal.

NON-DEFENSE EXPENDITURES

THE country is in substantial agreement that we are faced with a great national emergency calling for unparalleled effort and sacrifice. We all accept with resignation the fact that expenditures for defense are now reaching unprecedented proportions and that the national income must be taxed more heavily than ever before to pay as much as possible from current revenues. The Congress now has before it a bill which will no doubt soon be enacted and which will boost our national taxes 3½ to 4 billion dollars yearly; there is definite evidence that, following this, another tax bill will soon be in preparation to boost, next year, federal revenues even higher.

All right, we must defend our way of life, at whatever cost. *But*, for long, long years now the Federal government has been proceeding with "pump-priming" tactics resulting in ever-mounting Federal debt; a flood has been poured down the well to get a trickle of return. Now defense necessity has brought us to a course of action which has already resulted in a tremendous increase in national income, and which all the pump-priming of previous years had been unable to accomplish.

Because we are resigned to the vast costs of defense there is all the more reason now to cut down on those expenditures for purposes other than defense. Many of the agencies and continuing appropriations which have been built up in past years can be reduced or eliminated. It is estimated that as much as two billion dollars per year can be cut from Federal expenditures without weakening our defense effort and with no essential loss to our economic structure. It is good husbandry to prune unproductive limbs, to force productive ones. The American Mining Congress, the U. S. Chamber of Commerce, and innumerable other citizens' representatives have long and consistently advocated this action, to the end that our government should be run on a businesslike basis. A saving now of two billion dollars per year would be doubly important; it would not only enable the taxpayers to meet more nearly the full cost of government through current taxes but it would hold down or reduce the carrying charges on the public debt, which are inevitably looming up as a major—one might almost say intolerable—burden of the post-war economy.

The taxpayers—the mass of citizenry of this country, are facing with courage a lowering in the standard of living to insure us a free democracy; the men of our draft army and of all the armed forces are facing with courage the prospect of fighting—if need be dying—to maintain our democratic way of life. Should not Congress and the administration face with equal courage their duty in reducing or eliminating non-defense and non-essential expenditures? A craven indulgence at this time, on the part of Congress and Administration leaders, in pork-barrel politics is not a sight to inspire patriotism in those who must bear the sorrow and the burden of preserving our freedom.

COAL PRODUCTION

DESPITE the prolonged coal strike last spring, and the long July fourth holiday, the coal mines of the country are making excellent progress in meeting estimated demands. For the week ending August 23, production of bituminous coal was estimated at 10¾ million tons, an increase of 21 percent over the corresponding week of last year. For the first 34 weeks of this year total production was in the neighborhood of 308,000,000 tons, or 22½ million tons over the same period last year. If an average weekly production rate of 10½ million tons for the remainder of the year can be maintained, the annual production will be 500,000,000 tons, which figure has been quoted as the probable requirements for this year. The mines can do this; they are doing it.

Stocking in advance of fall peak demands has also been proceeding at an accelerated pace in accordance with the concerted appeals of producers, retailers, governmental and private agencies. There is still much to be done, however, and efforts must not be relaxed. As of August 18, movement of bituminous coal on the Great Lakes was about 25,000,000 tons, almost 5,000,000 tons less than on the same date last year. But the movement is at an accelerated rate, with about 5,000,000 tons going through the dumpers every three weeks and with about 15 weeks remaining of the season. To New England, shipments for the first seven months were approximately 11,000,000 tons of anthracite and bituminous, of the estimated 20,000,000 tons required for the season. Requirement figures may be revised upward in all eastern and northeastern markets if the fuel oil situation continues tight and the movement to coal-burning furnaces continues, as it undoubtedly will. In June, total of stocks in consumers bins or stockpiles showed a gain of more than 14 percent over the total at the end of May, or sufficient to last 35 days at the June rate of consumption.

The industry has fought not only production problems but prolonged labor trouble, yet it is rising to the needs of the times with spirit and ability.

Left: Yellow Pine mine in the valley; reservoir in background

THE YELLOW PINE MINE — A Gold, Silver, Antimony, and Tungsten Producer In Central Idaho

By JOHN D. BRADLEY
Vice President
Bradley Mining Company

The Yellow Pine Mine, near Stibnite, Idaho, has been developed by the Bradley Mining Company as a gold-silver-antimony producer. This spring tungsten was discovered in diamond drill cores from part of the property; now under way is a further development which promises to make the mine one of the most important tungsten producers of the country.

\+ + +

THE Yellow Pine Mine is located about 100 miles northeast of Boise, Idaho. The property is operated by the Bradley Mining Co. under an option to purchase agreement with the United Mercury Mines Co.

The property was optioned in 1927 on the basis of a sizeable orebody located about 2½ miles to the south of the present workings. This orebody, as can be seen by the accompanying section was apparently controlled by flatly dipping features such as dikes and faults. No attempt other than diamond drilling was made to determine the extent of ore below the 400-ft. level of the Meadow Creek Mine, but the drilling results were not encouraging. From 1932 until 1938 275,654 tons of ore were extracted averaging $7.63 in gold ($35 per oz.) plus 1 oz silver and 2 per cent antimony. Where first encountered on the haulage adit the vein was stoped for a length of 500 ft. and for widths varying from 5 to 50 ft.

Operations Moved to Lower-Grade Open Pit Orebody in 1938

In 1938 the Meadow Creek Mine was shut down in favor of an area 2½ miles to the north along the same fault zone. This area, though lower grade, was amenable to surface mining operations resulting in a more economical operation. The location of this larger lower-grade orebody is at the junction of the north-south Meadow Creek fault and the Sugar Creek fault which strikes slightly east of north. The ore lies in the wedge between the two faults and also follows each fault away from the intersection an undetermined distance. The ore is known, however, to extend away from the point of intersection in its wedge-shaped form for 900 ft. at which point the divergence between the faults is 600 ft. Furthermore, along the northeast fault ore is now being mined at a distance of 1,300 ft. from the fault intersection.

The large orebody had been thought to exist for several years prior to its actual development. The size, grade, adaptability to cheap mining, however, were not fully realized. From two short tunnels on the east and west sides of the ore zone diamond drilling in the latter part of 1937 suggested the importance of this orebody.

Worthen Bradley, Pres., Bradley Mining Co., right, and James Bradley, Cons. Eng., on cage at Idaho Tungsten shaft

In 1938, therefore, a large cut about 100 ft. wide was started on the west side of the zone which we named our West Quarry. Production from this area was sufficient to replace the Meadow Creek Mine tonnage by the middle of 1938 so that in June of that year the underground tonnage was stopped.

During the operation of the West Quarry, prospecting of the east side was being conducted by diamond drilling. This drilling, both from the surface and the original prospecting tunnel run into the ore body several years previously, indicated that the east side of the ore zone would be more profitable than the west owing to higher gold values.

Therefore, a crosscut tunnel was driven about 200 ft. on the east vein to confirm the drilling results. Further confirmation by 400 ft. of drifting was done before stripping of the zone commenced.

We have found diamond drilling to be a very accurate method of prospecting and consequently estimate our ore reserves on drilling results.

Scheelite Orebody Now Being Developed

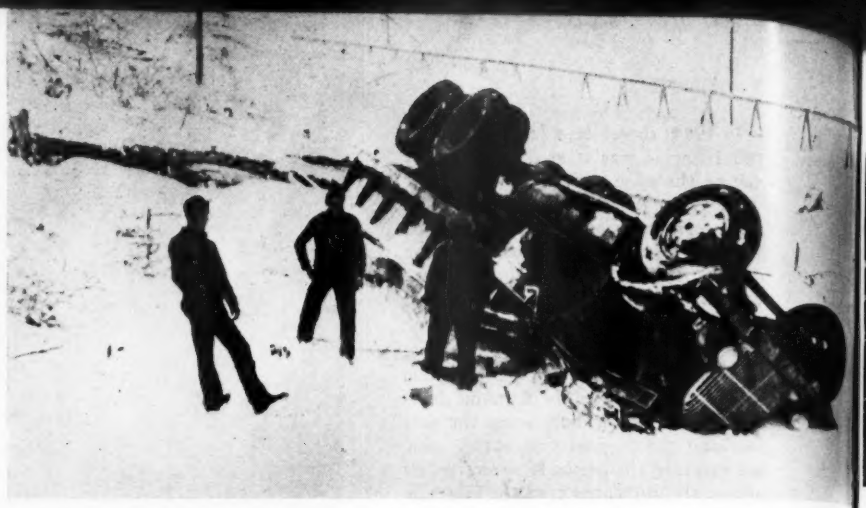
Mineralization of the orebody is primarily pyrite and arsenopyrite disseminated through the more or less altered granodiorite-aplite country rock. Apparently both minerals are gold bearing. Stibnite is found disseminated through the gold ore and also in high grade stringers but is localized to the western half of the ore zone. In the western half of the zone has recently been discovered very substantial deposits of scheelite. The scheelite deposition appears to be controlled by a series of N 75° E fractures. The scheelite occurs in fissures which appear to have been opened subsequently to the pyrite deposition. Stibnite apparently was of a later date than the scheelite, as stibnite can be found in fractures of the scheelite.

To develop the tungsten orebody a vertical shaft near the western edge of the main ore zone was sunk to a depth of 165 ft. from which point a crosscut was driven to the west. At 80 ft. from the shaft the beginning of the tungsten deposit was encountered and the face of the crosscut at 250 ft. from the shaft as seen a few days prior to this writing still contained a scattering of fair grade scheelite. The scheelite deposited in the N 75° E fissures is of good grade and width; between the major fissures the scheelite is somewhat disseminated but still re-

Above: Starting the Tungsten Shaft, April 1, 1941

Above: East Pit, winter of 1940-1941

Below: Blasting in East Pit, summer, 1941



Right: The trials of winter haulage

tains the fissure type of deposition although these small fissures are isolated from one another and are not persistent in any dimension.

Scheelite First Discovered in Diamond Drill Cores

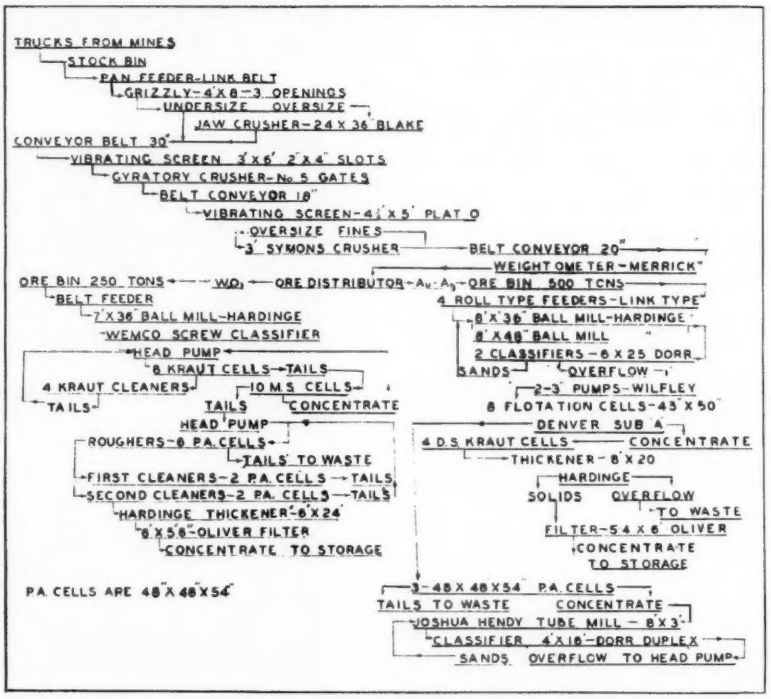
The presence of scheelite was first discovered in the spring of 1941 when Donald E. White of the United States Geological Survey commenced studying the cores of the various diamond drill holes drilled by the Bureau of Mines during the preceding summer and winter.

Surface gold mining operations are at present confined to the easterly portion of the vein containing little or no antimony and no tungsten. Drilling is accomplished with two wagon drills. Both the horizontal and vertical holes are drilled dry. The horizontal holes are normally drilled from 18 to 24 ft. while the vertical holes are usually drilled to 24 ft.; the holes are spaced from 5 to 10 ft. apart. Round 1¼-in. steel with Timken detachable bits is used. The 24-ft. holes bottom with a 2-in. bit. Down holes are loaded with du Pont "Red Cross" No. 4 free-running in bags, and flat holes with du Pont "Gelex" No. 2. Springing of the holes is practiced to some extent and final charges range from 25 to 70 lbs. of explosive. Blasting of the bench holes is done electrically. Large boulders are block-holed in the pit with Ingersoll-Rand S-49 jackhammers using 1-in. hexagonal steel and forged bits. Thirty percent du Pont special gelatine, caps and fuse are used in secondary blasting. In the primary breaking about 3 tons of ore are broken per lb. of explosive.

A Bucyrus-Erie 20-B ¾-yd. shovel and a ⅝-yd. Northwest shovel load the broken ore and waste into trucks for haulage to the mill and waste dumps. Eight Cummins diesel trucks are utilized for the 2½-mile ore haul and the 76-mile concentrate haul; the latter is to the railroad at Cascade. Four gasoline trucks are used for the shorter waste haul.

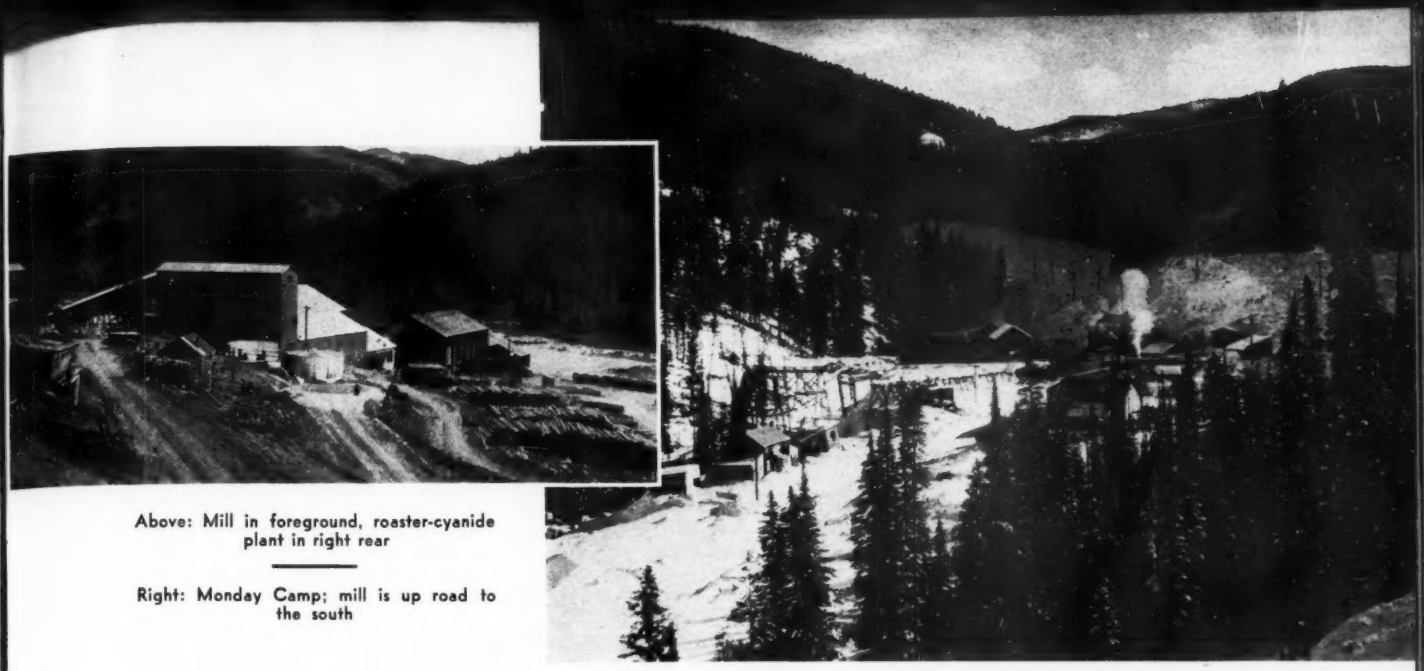
The Mill

The capacity of the gold mill is between 400 and 450 tons per day. Additional equipment has been installed to



Above: Mill flow sheet, showing both tungsten and gold mill circuits

Right: Wagon drills in East Pit



Above: Mill in foreground, roaster-cyanide plant in right rear

Right: Monday Camp; mill is up road to the south

handle the scheelite ore which will be concentrated at the rate of 150 tons daily.

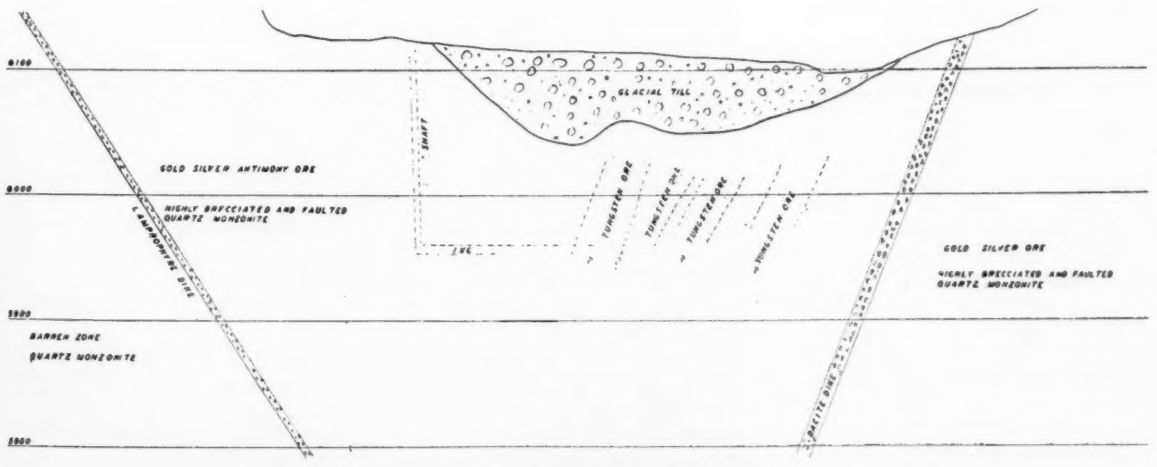
The ore trucks dump onto a flat and into a small 25 ton pocket ahead of the jaw crusher. Only a small bin is used, as in the winter the muck in a larger pocket would freeze. With the method in use the crusher takes the ore out of the pocket as fast as the trucks dump it. If there is a hang-up in the crushing plant, the trucks dump onto the flat storage space on a level with the pocket, and a D-2 caterpillar is employed to feed the muck to the bin when the crushing plant again resumes operation.

There is another reason for the use of the flat storage area and small bin in favor of a large storage bin. The scheelite ore may be piled on the surface near the bin until it is convenient for the crushing plant to accept this ore when it will pass through the plant into the mill bin at the head of the tungsten circuit.

The crushing plant will crush both the gold and the tungsten ores. This plant consists of a 24 x 36 Blake jaw crusher followed by a No. 5 Gates gyratory crusher which in turn is followed by a a 3 ft. Symons cone crusher. A Merrick weightometer is placed between the Symons crusher and the ore distributor over the mill bins. The size of the ore delivered to the mill is governed by what will pass through the ¾-yd. shovel bucket which loads the trucks for delivery to the mill. There is a 3-in. grizzly ahead of the primary 24-in. x 36-in. breaker whose product is about 4 in. This crusher is flat belt driven by a 75-h.p. Westinghouse motor. About 30 percent of the feed passes through the grizzly. The capacity of the crushing plant is about 80 tons per hour.

The grinding units for the gold circuit consist of two Hardinge mills, one an 8-ft. x 48-in., and the other an 8-ft. x 36-in. Each mill is in closed circuit with 6-ft. x 25-ft. Dorr classifiers.

The gold circuit roughers are 8 Denver Sub-A 43-in. x 50-in. machines. These are followed by 3 Pan-American 48 x 48 x 54 scavengers. The concentrate is cleaned in 4 D.S. type Kraut cells.



Vertical section, looking north, through tungsten deposit of "Idaho Tungsten Mine"

Shaft house of Idaho Tungsten Mine, and East Quarry, Yellow Pine Mine

J. D. Bradley, right, and H. D. Bailey, Gen. Supt. of these operations

Tungsten Ore Treatment

The tungsten ore is ground in a 7-ft. x 36-in. Hardinge mill in closed circuit with a Wemco screw type classifier. The sulphides are pulled in 8 Kraut cells and 10 M.S. cells after which the tails pass on to the scheelite circuit composed of 9 Pan-American roughers followed by 2 sets of 2-cell Pan-American units as cleaners. Each unit cleans one-half the rougher concentrate. This is not quite according to the attached flowsheet which has been changed slightly.

It is our intent in the near future to make two concentrates from the sulphides in the tungsten ore rather than the bulk concentrate which is now being combined with the regular gold concentrate which is shipped to the United States Smelting Refining & Mining Co.'s smelter at Midvale, Utah. The reason for so doing is to save economically the antimony which accompanies the scheelite ore; it is rather interesting to note that so far as yet determined where the best grade scheelite occurs so does the best grade antimony.

Tailings run by gravity from the mill to the tailing pond where they are allowed to settle behind a large dike from which the water escapes through the usual sump box arrangement. The overflow into the sump box is definitely not clear as the slimes are extremely slow in settling.

During the winter months owing to the necessity for keeping our airport in good condition the tails are run directly into the creek. The movement of the tailings under the snow-covered airport would be extremely dangerous.

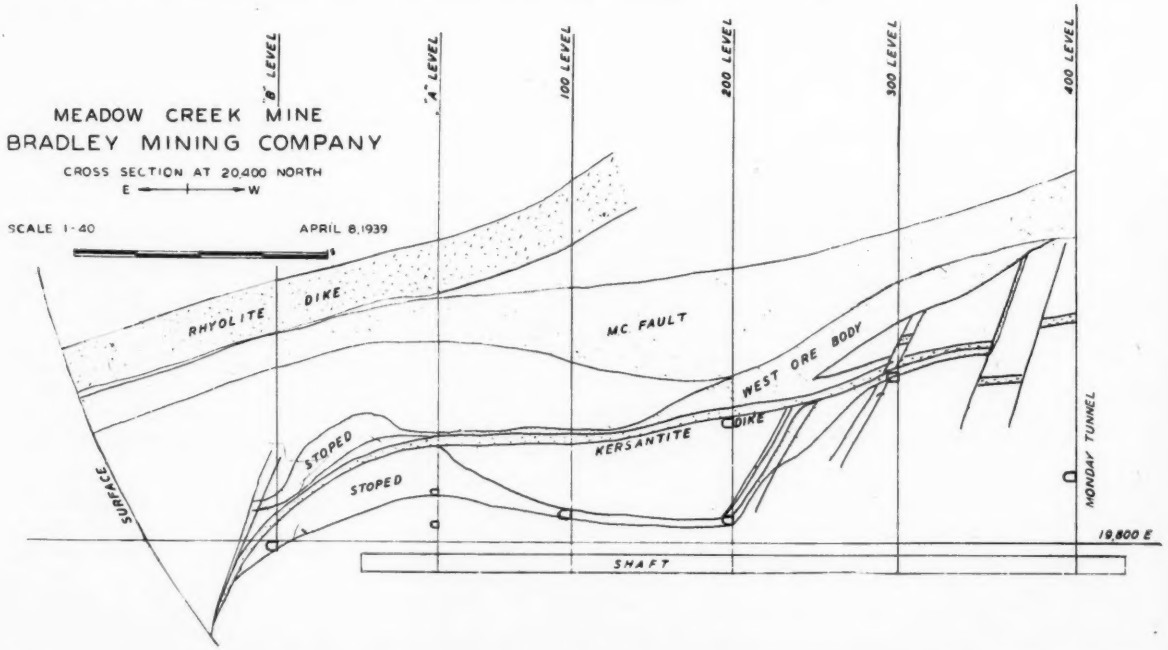
From the meagre results so far compiled from practice, the scheelite is concentrated only to between 15 and 20 percent, while the bulk sulphide concentrate averages about 30 percent antimony and $40 in gold. By selectively floating the antimony, we expect to increase its grade to between 50 and 60 percent. Close to the available market price will then be realized for the antimony rather than the very low price now received.

The gold concentrate produced from the surface mining operations has approximately the following analysis:

Au	3 oz.
Ag	3½ oz.
Cu	0.2%
Pb	.....
Fe	26.5%
Insol	33.0%
S	28.0%
Zn	Tr.
Sb	0.9%
As	8.0%

Mine Results

During the year 1940, 132,297 tons of ore were milled from the surface operations which assayed $4.94 per ton in gold; on which the ratio of concen-



Right: One of the Diesel-generator installations

tration was approximately 30 to 1, and the economic recovery 55 percent.

Both Hydro-Electric and Diesel Power Installed

Power is produced both from hydro-electric plants and diesel plants. The hydro-electric plants consist of the following units:

Two 525 K.V.A. 2,400-volt, 3-phase 60-cycle units. The net head on these units is 490 ft. Each pelton wheel is designed to handle 12 c.f.s. at which quantity of water the rated output of each wheel is 540 h.p. Unfortunately, this amount of water is available for less than one-half of the year; during the balance of the year only one unit can be operated to full advantage.

One 400 K.V.A., 4150 volt, 3-phase, 60-cycle Pelton Francis unit. At 290 ft. head with 15 c.f.s. this Francis turbine is designed to develop 395 h.p.

One 75-K.V.A., 480-volt, 3-phase, 60-cycle. Maximum water supply for this machine is 3 c.f.s. with a net head at this flow of 390 ft. The output of the wheel is rated at 90 h.p.

One D17,000 Caterpillar 8-cylinder engine producing 125 continuous h.p. and delivering 80 k.w. at .8 power factor.

One D-13,000 Caterpillar 6-cylinder engine producing 98 continuous h.p. and delivering 60 k.w.

One LP-600 Cummins 6-cylinder engine producing 225 continuous h.p. and delivering 100 k.w.

One Wisconsin engine connected to a 95-K.V.A. generator.

The staff of the Yellow Pine Mine is as follows:

Harold D. Bailey, general superintendent.

Louis N. Postma, assistant superintendent and mill foreman.

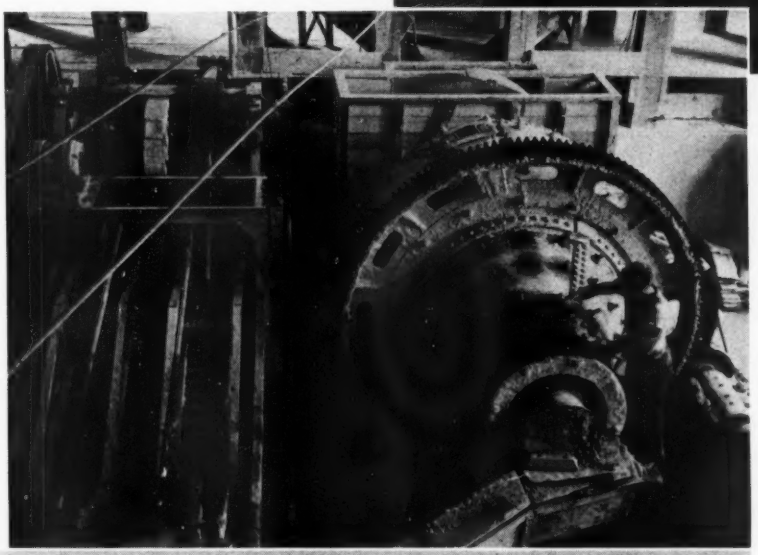
Robert E. Baker, metallurgist.

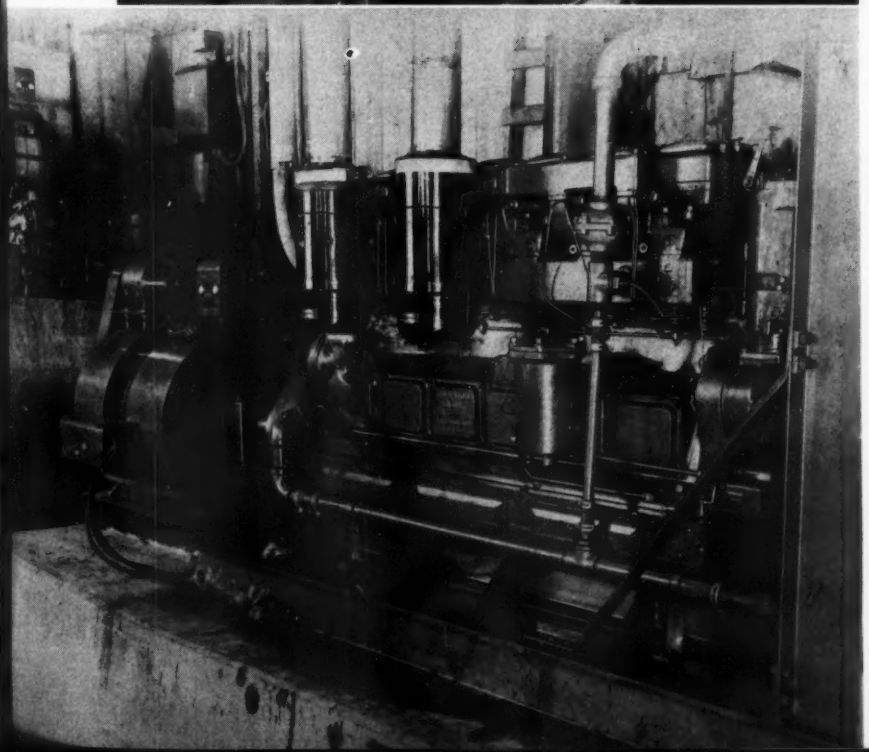
Joseph A. Mecia, engineer.

Thomas Fleming, foreman of Tungsten Mine.

William Newall, foreman surface mining operations.

Below: Hardinge mill and Dorr classifier in the mill





Left: Another Diesel-generator installation, 100 k.w.

SAN FRANCISCO'S GOLDEN GATE
Opens Wide for Metal Miners

● ***The city of the Fortyniners is host this year to the metal miners of the nation, who will gather on September 29—October 2 to consider the problems of Metals for Defense.***

ATOP historic Nob Hill, looking out over the sparkling San Francisco Bay and the soaring spans of the Golden Gate and San Francisco-Oakland Bay bridges, is the site of the Eighth Annual Metal Mining Convention and Exposition of the American Mining Congress, from Monday, September 29 to Thursday, October 2, inclusive. Headquarters for the Convention will be the Fairmont Hotel which, together with the Mark Hopkins adjoining and the many other hostelries of the city, will be ready to care for those who attend.

From this elevated viewpoint and at this most opportune time metal miners from all over the country will gather to consider the critical problems of the industry, when the nation is in more dire need than ever before of greater metal production.

Under the leadership of James Wade as General Chairman of the Program Committee; William C. Browning, Chairman of the Western Division; Howard I. Young, President of the American Mining Congress, and P. R. Bradley and Albert F. Knorp as Chairman and Vice Chairman of the General Arrangements Committee, plans are being completed for a program seeking answers to those vital problems in the industry which must be solved if the country is to have an adequate supply of metals for defense.

The Convention and Exposition will get under way at 9 o'clock Monday morning, September 29, at which time delegates will begin to register. The many interesting and instructive exhibits arranged by manufacturers and filling the available space, as well as overflowing to the blocked-off area in front of the hotel, will be open for inspection at that time.

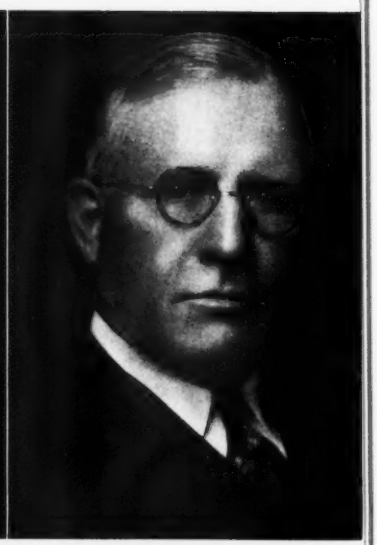
The initial session will convene at 10:15 Monday morning.

Program of Important Topics

Assisting Chairman Wade in planning and arranging this all-important program are State and District chairmen and members of the Program Committees, representing the major metal mining states and districts of the country and Alaska, the names of which are shown on pages 26 and 27. These committees insure that careful attention has been given to making the Convention meet the needs of the times.

HOWARD I. YOUNG
President
American Mining
Congress

JAMES W. WADE
Chairman
Program Committee



PHILIP R. BRADLEY
Chairman
Arrangements Committee

WILLIAM C. BROWNING
Chairman
Western Division
American Mining Congress

"All-out" production for defense brings to the fore not only those problems directly affecting greater and more efficient production but also many perplexing difficulties in economics and administration. The mines will bear their just burden of taxes but, what is a just basis for taxation in these times? Governmental price policies and other governmental controls have a profound effect on the proper development and operation of mines; needed materials and equipment can only be obtained through a Priorities system which recognizes the great importance of mining; actions of agencies such as the RFC and its subsidiary, Metals Reserve Corporation, also have a major effect on the development and operation of mining properties. All these topics and others of equal importance will be considered.

The morning sessions, after Monday, will begin at 10:00 and in the afternoons at 2:00. There will be a total of twelve sessions in the four days, with a series of four special operating sessions being held on Tuesday and Wednesday concurrently with those devoted to economic and legislative affairs.

It will be noted that at the opening meeting the subjects to be discussed are Mine Accident Prevention, and Labor Relations and Defense Production, the latter by Albert W. Hawkes, President of the U. S. Chamber of Commerce. The afternoon will be given over to a discussion of the position of the Metals Today, a short review on each of the major and strategic metals by acknowledged authorities in the field. Topics for the next day will be as follows: Western Power Production and Mineral Development, by Ivan Bloch, Chief of the Market Development Section of the Bonneville Power Administration, discussing measures for western mineral development from the power now being made cheaply available by the great dams built and building in the west; this will be accompanied by papers on Supplying our Manganese Requirements, and Tungsten, Chromium and Vanadium Today. Governmental Price Policies and The Need for All-Out Metal Production, as viewed by responsible officials of the defense agencies, will be considered on Tuesday afternoon.

Wednesday morning will be taken up with the problems of Stream Pollution, so vital to the west, and the Effect of Governmental Controls on Exploration for Mines. Governmental action on taxation, on public lands policies, on wage and hour control for labor and in many other ways is hav-

ing more effect year by year on the exploration for mines and success or failure of mining enterprise. The relationships of these many new restrictions and burdens to development of the new mines so greatly needed for the future maintenance of the industry will receive attention and discussion at this time.

The afternoon will be filled with a symposium on Recent Ore Discoveries and the Factors Responsible for Them. This symposium is being arranged by L. K. Requa, President and General Manager, Idaho-Almaden Mines Co., for a full discussion on the uses of geology in mining exploration. It is expected that it will really be an extension of the extremely interesting session held last year during the meeting at Colorado Springs, where a most animated discussion was carried on of Mining Geology Today. Taking part in this year's program and representing the various sections of the country as noted, will be: For the Intermountain Region, W. R. Landwehr, Geologist, American Smelting and Refining Company; for the Southwest, B. S. Butler, Professor of Geology, University of Arizona; for the Pacific Coast, Carlton D. Hulin, Associate Professor of Geology, University of California; for the Northwest, Norman M. Smith, Chief Geologist, and John Edgar, Chief Engineer, Sunshine Mining Company; and for Colorado, Wyoming and the Black Hills, James Boyd, Associate Professor of Geology, Colorado School of Mines. Many others will also take part and contribute their viewpoints and experience.

On Thursday morning tax problems of the industry, which are proving to be deterrents to mine operation and development, will be aired. Featured will be talks by Louis Cates, President, Phelps-Dodge Corporation, on Taxes, An Operating Problem; and the Excess Profits Tax on Mining by Ellsworth C. Alvord, Counsel, American Mining Congress. Among others participating will be some of the men who have actively followed the proceedings leading to enactment of the 1941 tax law. After luncheon the RFC and Defense Metals will occupy the interest and attention of delegates, through an address by the chairman of the Reconstruction Finance Corporation, Ex-Senator Charles B. Henderson of Nevada. The RFC has been taking a large and most important part in the program of defense metal development; capital is loaned new mining enterprises, and purchases are being made from Latin America and other parts of the world of metals in which we show a deficiency.

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Entertainment

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Attendance

CHAS. H. SEGERSTROM
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H. W. GOULD
Trips

Priorities on Mining Equipment will also be discussed at this time by Dr. Shaw Livermore of the OPM Priorities Division. As the production of defense materials mounts, non-essentials will be ruthlessly pruned. The importance of mining has already received recognition by the issuance of Preference Ratings for equipment but as all industries of the country are reoriented for the defense effort, dislocations and shortages are bound to occur. Notwithstanding the Priorities Ratings already granted and vitally needed, the industry is still faced with the possibility of shortages in machinery, replacement parts and supplies for the operation of the mines. These problems will be discussed in the light of the situation at the time.

On Tuesday and Wednesday, morning and afternoon, the sessions devoted to current operating and production problems will be held in a second meeting room. Tuesday morning will be occupied with papers on Placer and Hydraulic Mining as follows: Bucket Line Dredge Practice; Developments in Dragline Methods, Equipment and Maintenance; and Problems in Present Day Hydraulicking. In the afternoon, in a symposium on Conveying and Loading the topics will be: Transportation by Shaking and Belt Conveyors; Shuttle Car Haulage for Metal Mines; Block Caving by the Use of Slusher Hoists and Scrapers, and Underground Mechanical Loading, followed by a motion picture of the

(*Continued on page* 28)

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Arizona

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California

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JOHN SCHROEDER
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Peru Mining Co.

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OREGON

JOHN ARTHUR
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WM. H. CULLERS
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LEVERETT DAVIS
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H. E. HENDRYX
Oregon Mining Review

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Cougar-Independence Lessees

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Oregon Mining Assn.

S. H. WILLISTON
Horse Heaven Mines

SOUTH DAKOTA

KENNETH C. KELLAR
Kellar & Kellar

TEXAS

*J. D. MACKENZIE
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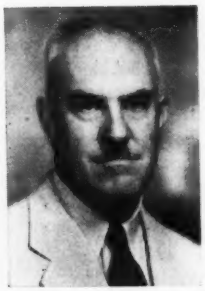
Oregon

HARLAN A. WALKER
South Dakota



M. W. HAYWARD
Texas

H. H. UTLEY
Tri-State

GLOYD M. WILES
Utah

JENS JENSEN
Washington

Pastoral beauty surrounds a gold mill in the far west, Melones, Calif.

loading and conveying operations at the Bennett mine of Pickands Mather and Company. This picture was made by the mining company and depicts graphically the mechanical operations at the mine.

Wednesday morning's operating session will present papers under the general heading of Mining Practice, as follows: Developments in Drilling, Blasting and Stoping; Filling Mine Stopes with Mill Tailings; Treatment of Detachable Bits and Drill Rods; and Drill Jumbos for Small Drifts. In the afternoon, milling will receive attention with short reviews on New Developments and Equipment in each of the fields of Coarse Crushing, Fine Grinding, Coarse Concentration, Flotation, and Cyanidation and Amalgamation, followed by a paper on Tungsten Milling at Bishop, California.

The speakers on these subjects are a cross-section of the best informed and most authoritative leaders in the mining industry. Ample time has been allowed for floor discussion on each subject and all who have experience to contribute are invited to do so.

A principal function of the meeting, closely related to the program, is the formulation of the industry's views on national questions—A Declaration of Policy—which will be undertaken by a Resolutions Committee. The resulting Declaration will be presented for consideration at the final convention session on Thursday afternoon.

Final Arrangements Made

Local committees have made careful plans for all phases of the convention, assuring guests a week replete not only with a discussion of industry affairs but also arranged to keep additional hours pleasantly occupied. Contributing to the success of these plans are many committee members under the leadership of P. R. Bradley as General Chairman of Arrangements and Albert F. Knorp as Vice Chairman. F. C. van Deinse is Chairman of the Finance Committee; Mrs. F. W. Bradley, Chairman, Ladies Committee; William S. Boyd, Chairman, Reception Committee; Errol MacBoyle, Chairman, Entertainment Committee; and Henry W. Gould, Chairman, Trips Committee. Working as members of the Attendance Committee, to insure a full turn-out for this important program, are Chairman F. W. Nobs and James E. Babcock, Harry Bell, P. R. Bradley, Jr., D. G. Brown, John A. Burgess, Fred Estep, Cal Haffey, E. A. Kent, Robert Linton, Charles G. Patmon, Edwin T. Regan, Alex T. Ross, and Vincent T. Ryan, Jr.

The Publicity Committee under the chairmanship of Charles H. Segerstrom, President, Nevada-Massachusetts Company, has also swung into action. Committee members are: Burt B. Brewster, Publisher, *Mining & Contracting Review;* Claude M. Chaplin, Editor, *Mining & Industrial News;* Miller Freeman, Jr., Editor, *Mining World;* J. P. Hall, Publisher, *California Mining Journal;* Howard Kegley, Mining Editor, *Los Angeles Times;* Charles Knight, California State Chamber of Commerce; H. C. Parmelee, Editor, *Engineering & Mining Journal;* J. B. Sexton, Assistant to Publisher, *Western Mining News;* and Charles F. Willis, Editor, *Arizona Mining Journal.*

Special Luncheon

A friendly atmosphere and an opportunity for welcoming old friends will be features of the luncheon on Monday noon in the Peacock Court at the Mark Hopkins Hotel. P. R. Bradley will preside and the welcoming address will be given by the Hon. Gordon H. Garland, Speaker of the Assembly of the California Legislature. Responses will be made by Howard I. Young, President of the American Mining Congress; William C. Brown-

Secretary, American Mining Congress

JULIAN D. CONOVER

In Charge Special Operating Sessions

RUSSELL C. FLEMING

ing, Chairman of the Western Division; James W. Wade, Chairman of the Program Committee; and Edward J. Burnell, Chairman of the Manufacturers Division, American Mining Congress.

Entertainment on Tap

Added features will be special parties for convention-goers on Monday and Wednesday evenings, and the final banquet on Thursday night at the Fairmont Hotel. Tuesday night will be left open for visitors to enjoy San Francisco in their own way.

Principal speaker at the Annual Banquet on Thursday evening will be John J. McCloy, Assistant Secretary of War. The Convention is fortunate in having from the center of the war effort this speaker who will present a forceful message of great importance to the metal mining industry and to industrialists everywhere. The War Department in supplying our new and expanded armies is one of the principal consumers of the metals today; Mr. McCloy is in a position to speak of the country's needs and the part the metal mining industry can take in supplying them.

Assistant Secretary of War, Principal Speaker at Annual Banquet

JOHN J. McCLOY

The Committees are busily arranging these and other activities to bring convention-goers together in a convivial atmosphere for fund and entertainment. The party on Monday evening is tentatively scheduled to be held in the Peacock Court of the Fairmont. On Wednesday evening a boat trip to include sights of interest about the Bay may be made, with special entertainment features.

(*Continued on page* 32)

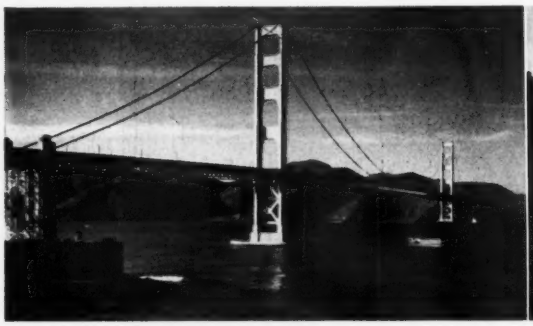
Western Division

THE AMERICAN MINING CONGRESS

WILLIAM C. BROWNING, Chairman
Gen. Mgr., Golden Queen Mining Co.

BOARD OF GOVERNORS

P. G. BECKETT, Vice Pres., Phelps Dodge Corp.
GUY N. BJORGE, Vice Pres. & Gen. Mgr., Homestake Mining Co.
PHILLIP R. BRADLEY, Pres., Alaska Juneau Gold Mining Co.
WORTHEN BRADLEY, Pres., Bradley Mining Co.
J. PRICE BRISCOE, Pres., Clear Creek-Gilpin Co.
WILLIAM J. COULTER, Gen. Mgr., Climax Molybdenum Co.
JOHN J. CURZON, Mgr., Chelan Div., Howe Sound Co.
WILLIAM B. DALY, Cons. Engr., Anaconda Copper Mining Co.
C. E. DAWSON, Gen. Mgr., Bald Mountain Mining Co.
E. B. DeGOLIA, Pres., Gold Hill Dredging Co.
C. F. DIKE, Mgr., Oklahoma-Interstate Mining Co.
C. O. DUNLOP, Pres., Northwest Mining Assn.
ROY B. EARLING, Gen. Mgr., Fairbanks Exploration Dept., U. S. Smelting, Refining & Mining Co.
FRED E. GRAY, Gen. Mgr., Desert Silver, Inc.
J. W. GWINN, Sec., Idaho Mining Assn.
LUTHER C. HESS, Pres., Alaska Miners Assn.
JENS JENSEN, Treas., Pend Oreille Mines & Metals Co.
EVAN JUST, Sec., Tri-State Zinc & Lead Ore Producers Assn.
J. C. KINNEAR, Gen. Mgr., Nevada Mines, Nevada Cons. Copper Corp.
ROSS D. LEISK, Gen. Mgr., Sunshine Mining Co.
ROBERT LINTON, Cons. Engr., Los Angeles, Calif.
A. G. MacKENZIE, Sec., Utah Chapter, American Mining Congress
J. D. MacKENZIE, Mgr., Southwestern Dept., American Smelting & Refining Co.
D. FORD McCORMICK, Sterling Mines, Inc.
HORACE MOSES, Gen. Mgr., Chino Mines Div., Nevada Cons. Copper Corp.
THOMAS H. O'BRIEN, Vice Pres. & Gen. Mgr., Inspiration Cons. Copper Co.
ROBERT S. PALMER, Sec., Colorado Mining Assn.
HENRY M. RIVES, Sec., Nevada Mine Operators Assn.
JOHN A. ROBINSON, Dir., Eagle-Picher Mining & Smelting Co.
IRVIN E. ROCKWELL, Gen. Mgr., Minnie Moore Mine Development Co.
FRANCIS A. THOMSON, Pres., Montana School of Mines
CARL J. TRAUERMAN, Pres., Mining Assn. of Montana
H. E. TREICHLER, Gen. Mgr., Texas Gulf Sulphur Co.
JAMES W. WADE, Pres., Tintic Standard Mining Co.
A. S. WALTER, Pres., New Mexico Miners & Prospectors Assn.
F. WHALLEY WATSON, Sec., Oregon Mining Assn.
GLOYD M. WILES, Vice Pres. & Gen. Mgr., Park City Cons. Mines Co.
CHARLES F. WILLIS, Sec., Arizona Small Mine Oprs. Assn.
SAMUEL H. WILLISTON, Vice Pres., Horse Heaven Mines
IRA L. WRIGHT, Gen. Mgr., Black Hawk Cons. Mines Co.



Golden Gate Bridge

Mission Dolores

Fisherman's Wharf

PROGRAM

Eighth Annual Metal Mining Convention

Monday, September 29

Morning Session

Mine Accident Prevention in the Present Emergency

JAMES K. RICHARDSON, Safety Dir., Climax Molybdenum Co.

Labor Relations and Defense Production

ALBERT W. HAWKES, Pres., Congoleum-Nairn Corp., and Pres., Chamber of Commerce of the United States

Discussion

M. W. DOBRZENSKY, Attorney-at-Law, Oakland, Calif.

LUNCHEON AND WELCOME TO DELEGATES

Presiding: PHILIP R. BRADLEY, General Chairman of Arrangements

Welcoming Address

HON. GORDON H. GARLAND, Speaker of the Assembly, California Legislature

Responses

HOWARD I. YOUNG, Pres., American Mining Congress

WILLIAM C. BROWNING, Chairman, Western Division, A. M. C.

JAMES W. WADE, Chairman, Program Committee

EDWARD J. BURNELL, Chairman, Manufacturers Division, A.M.C.

Afternoon Session

METALS TODAY—WHERE ARE WE?

Synopses of the present status and outlook for the various metals . . . Their part in the defense program . . . New problems.

Copper—WILLIAM S. BOYD, Vice Pres., Nevada Consolidated Copper Corp.

Zinc—WALLACE G. WOOLF, Supt., Electrolytic Zinc Plant, Sullivan Mining Co.

Lead—FELIX E. WORMSER, Sec.-Treas., Lead Industries Assn.

Iron Ore—PATRICK BUTLER, Vice Pres., Butler Brothers.

Gold—F. W. NOBS, Vice Pres., Empire Star Mines Co., Ltd.

Mercury—GORDON I. GOULD, H. W. Gould & Co.

Molybdenum—JOHN E. WILSON, Climax Molybdenum Co.

Antimony—R. G. HALL, Bradley Mining Co.

Potash and Borax—RUSSELL W. MUMFORD, Consulting Engr., American Potash and Chemical Corp.

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Tuesday, September 30

Morning Session

Western Power Production and Mineral Development

IVAN BLOCH, Chief, Market Development Section, Bonneville Power Administration

Discussion

Electro-thermic Production of Magnesium

H. A. DOERNER, Engr. in Charge, Pullman Wash. Unit, U. S. Bureau of Mines.

Aluminum Production from Western Alunite

FRANK EICHELBERGER, Pres., Kalunite, Inc.

The Domestic Manganese Situation

FREDERICK LAIST, Gen. Met. Mgr., Anaconda Copper Mining Co.

Tungsten, Chromium and Vanadium Today

J. R. VAN FLEET, Vice Pres., U. S. Vanadium Corporation

Afternoon Session

Governmental Price Policies

A representative of OPA (to be announced)

The Need for "All Out" Metal Production

A representative of OPM (to be announced)

Wednesday, October 1

Morning Session

Stream Pollution
ROBERT M. SEARLS, Attorney-at-Law, San Francisco, Calif.

Discussion
EARL K. NIXON, Director, Oregon State Dept. of Geology and Mineral Industries

Effect of Government Controls on Exploration for Mines
EDWARD H. SNYDER, Gen. Mgr., Combined Metals Reduction Co.

Afternoon Session

ORE DISCOVERY

A symposium on recent ore discoveries in the west and the factors responsible for them.

Moderator:
LAWRENCE K. REQUA, Pres., Idaho Almaden Mines Co.

Intermountain Region—W. R. LANDWEHR, Geol., American Smelting & Refining Co.

Southwest—B. S. BUTLER, Prof. of Geology, University of Arizona.

Pacific Coast—CARLTON D. HULIN, Assoc. Prof. of Geology, University of California.

Northwest—NORMAN M. SMITH, Chf. Geol., and JOHN EDGAR, Chf. Engr., Sunshine Mining Co.

Colorado, Wyoming and Black Hills—JAMES BOYD, Assoc. Prof. of Geology, Colorado School of Mines.

★ ★

Thursday, October 2

Morning Session

Taxes—An Operating Problem
LOUIS S. CATES, Pres., Phelps Dodge Corp.

The Excess Profits Tax on Mining
ELLSWORTH C. ALVORD, Counsel, American Mining Congress

Discussion and Questions—Among those participating will be some of the men who have actively followed the development of the 1941 tax law, including

GRANVILLE S. BORDEN, Idaho Maryland Mines Corp.
DONALD A. CALLAHAN, Pres., Lexington Mining Co.
LEO J. HOBAN, Sec., Hecla Mining Co.
HERBERT C. JACKSON, Pickands Mather & Co.
EVAN JUST, Sec., Tri-State Zinc & Lead Ore Producers Assn.
ARTHUR H. KENT, Alvord & Alvord.
A. G. MACKENZIE, Sec., Utah Chapter, American Mining Congress.
JAMES A. RUNSER, McLaren, Goode & Co.
CHARLES F. WILLIS, State Sec., Arizona Small Mine Operators Assn.

Afternoon Session

The R. F. C. and Defense Metals
HON. CHARLES B. HENDERSON, Chairman, Reconstruction Finance Corporation

Priorities on Mining Equipment
DR. SHAW LIVERMORE, Economic Advisor, Office of Production Management.

Special Operating Sessions

Tuesday, September 30

Morning Session

PLACER AND HYDRAULIC MINING

Bucket Line Dredge Practice
NORMAN CLEAVELAND, Mgr., Roaring River Gold Dredging Co.

Developments in Dragline Methods, Equipment and Maintenance
HARRY S. LORD, Lord & Bishop

Problems in Present-Day Hydraulicking
J. POWER HUTCHINS, Consulting Engr., San Francisco, Calif.

Afternoon Session

SYMPOSIUM ON CONVEYING AND LOADING

Transportation by Shaking Conveyors and Conveyor Belts
(To be announced)

Shuttle Car Haulage for Metal Mines
L. E. YOUNG, Consulting Engr., Pittsburgh, Pa.

Block Caving by the Use of Slusher Hoists and Scrapers
PAUL J. SIRKEGIAN, Gen. Supt., Consolidated Coppermines

Underground Mechancial Loading
JOSEPH A. WILCOX, Supt., Shattuck Denn Mining Corp.

Motion Picture—Loading and Conveying Operations at the Bennett Mine, Pickands Mather & Co.

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Wednesday, October 1

Morning Session

MINING PRACTICE

Developments in Drilling, Blasting and Stoping
LUCIEN EATON, Consulting Engr., Milton, Mass.

Filling Mine Stopes With Mill Tailings
CHARLES W. PLUMB, Gen. Mgr., Sliger Mine, Middle Fork Gold Mining Co.

Treatment of Detachable Bits and Drill Rods
CHARLES A. KUMKE, Mine Supt., Golden Queen Mining Co.

Discussion—Grinding versus Hot Milling

Drill Jumbos for Small Drifts
M. D. PAINE, Chief Engr., Tintic Standard Mining Co.

Afternoon Session

MILLING PROGRESS

Review of New Developments and Equipment

Crushing—MAX W. BOWEN, Mill Supt., Golden Cycle Corp.
Fine Grinding—ROY HATCH, Supt., Utah Copper Co.
Coarse Concentration—W. L. ZEIGLER, Mill Supt., Hecla Mining Co.
Flotation—A. W. FAHRENWALD, Dean, School of Mines, University of Idaho
Amalgamation and Cyanidation—FRED WISE, Mine Supt., Getchell Mine.

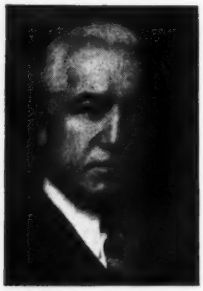
Tungsten Milling at Bishop, Calif.
BLAIR BURWELL, Gen. Supt., U. S. Vanadium Corp.

Metal Directors

American Mining Congress

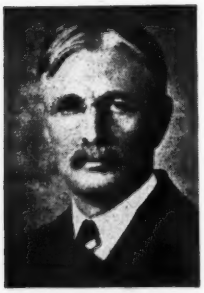
Not Shown: N. W. RICE

A. E. BENDELARI



DONALD A. CALLAHAN

L. S. CATES



CLINTON H. CRANE

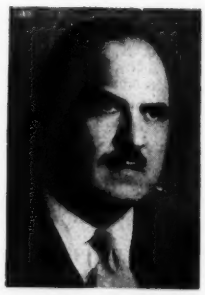
E. B. GREENE

JAS. R. HOBBINS

D. D. MOFFAT

H. L. PIERCE

CHAS. H. SEGERSTROM



MERRILL E. SHOUP

An added and most interesting feature of the convention will be a display at the Fairmont of historic relics and objects of interest from the early days. Through Wells-Fargo and Company there will be on view a cabinet of gold nuggets and leaf gold, each with an interesting history; this will be supplemented by another extremely valuable collection of specimen gold from C. L. Best. A stage coach preserved from its usage in the Mother Lode country in the pre-railroad days will lend atmosphere to the exhibits on Mason Street.

For those who wish to explore into the historic aspects of mining in California and see the modern developments of the industry in the same fields, a two-day trip for Friday and Saturday, October 3 and 4, is being arranged. Convention visitors may see some of the major placer mining operations in California, and an opportunity will be afforded, for those who wish, to see modern mining developments on the Mother Lode, with an over-night stop at Volcano, California, where entertainment in keeping with the storied character of that part of the country will be awaiting the sightseers.

Ladies Will be Entertained

San Francisco's well-known character as a vacationland, with its renowned bracing atmosphere, offers unusual opportunities to the ladies at this time. A program is being worked up by the Ladies Entertainment Committee under the chairmanship of Mrs. F. W. Bradley that will take full advantage of these features. Final details will be announced at the meeting. The ladies will, of course, participate and add gracious presence to the Welcoming Luncheon on Monday, the Annual Banquet on Thursday evening and the other evening entertainments, as well as being free to accompany the men on the field trip mentioned above.

Complete Exposition of Mining Equipment

P. D. MacMURRER
Assistant to Secretary, American Mining Congress

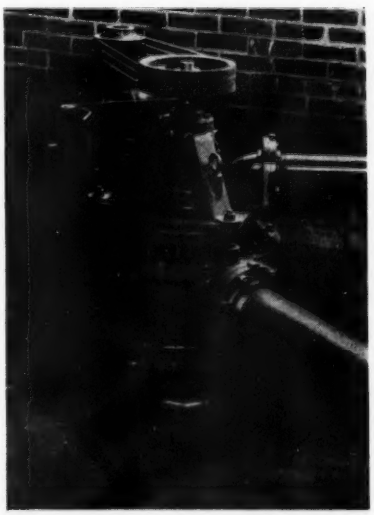
A COMPLETE and impressive display of modern metal mining machinery and supplies will be ready for inspection in the spacious exhibit halls of the Fairmont and in an area reserved in front of the hotel, when the convention doors are thrown open on Monday. Some fifty prominent national manufacturers will put their best foot forward and have assembled for inspection and discussion all that is new and most useful in the way of equipment and supplies. This exposition offers the mining man an opportunity to get together with his suppliers and view in one central location all his needs and the latest innovations in which he is interested, both in mining and in milling machinery and supplies. Supervising the exhibits will be special representatives with a wide knowledge of operating conditions, who will be glad to give their trained assistance and expert knowledge to the solution of equipment problems.

Space limitations preclude the giving here of full descriptions of these attractive and interest-begetting displays at the Metal Mining Show, but the following thumb-nail sketches are a preview of some of the items on which the limelight will be focused.

• ALLEN-SHERMAN-HOFF CO., THE

Will exhibit:

1. Packless, totally-rubber-lined Hydroseal pump, for the handling of corrosive and abrasive solutions and so arranged that there is no stuffing box or packing required.



2. Hydroseal, totally-rubber lined pump for handling abrasive solutions, designed to maintain the efficiency almost indefinitely, as there is no leakage back to the suction of the pump.

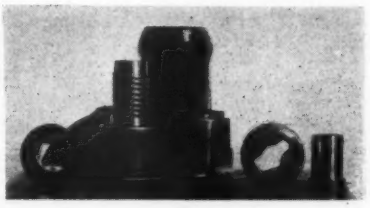
3. A-S-H Flex-Check valve. This valve, as its name indicates, allows the flow of solution in a pipe line in but one direction. It is totally rubber-lined. The check is in fact a steel plate covered with rubber, movable within the valve by flexing of rubber.

• ALLOY STEEL AND METALS CO

No description received.

• AMERICAN PNEUMATIC TOOL COMPANY

Will feature the progress made in the past few years in hard facing applications on mining machinery. One of the outstanding examples of this will be shown in the use of hard facing on pneumatic tool replacement parts, where the life of replacement parts has been increased from four to six times by this method, particularly on fast wearing drill parts such as chucks, front heads, rifle bars, drill sharpener dies, and Fuller Blocks.



Columns, mountings and other miscellaneous materials for mine use will be shown. *In charge—Robert Irving.*

• AMERICAN BRATTICE CLOTH CORP.

Will have on display a miniature blower and tubing ventilation system. This will show on a small scale some of the exclusive features of Mine Vent Flexible Tubing. Actual samples of couplings and tubing material will also be on hand for demonstration. *In charge — Blaine Mikesell.*

• ANACONDA WIRE & CABLE CO.

Will have an exhibit designed to show electrical wiring to speed production and increase safety.

Featured will be a self-grounding, portable electric cord for mining machines recently developed as an aid to forestall interruptions of production due to cords, and to increase the safety factor.

The exhibit will contain 20 feet of colorful dioramas with miniature applications of the various Mine Electrifying material.

Samples of cable, especially adapted for mining use will be on hand, together with a complete bore hole unit. *In charge—E. A. Casey.*

• **ATLAS POWDER COMPANY**

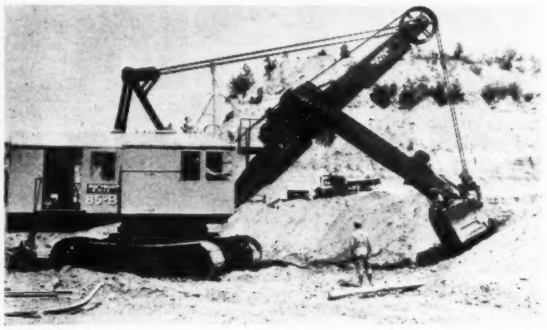
Atlas Amodyns will be featured—a recently developed complete series of mining explosives with a new balance of strength and speed. Amodyns are low density, ammonium nitrate type explosives. They are made in a High Velocity series of six grades and a Low Velocity series of six grades. All have the same weight strength, but each grade has a different cartridge count and hence a different cartridge strength. Thus, high velocity is possible without increase in strength. Or, low velocity action may be had without sacrificing strength. *In charge—W. G. Frome.*

• **BETHLEHEM STEEL COMPANY**

Will display steel ties, switch stands, cast frogs, wire rope, mine car wheels and transparencies of mine cars built for West Coast concerns.

• **BUCYRUS-ERIE COMPANY**

Thirty photographic blow-ups will be shown, of Bucyrus-Erie installations in metal mining all over the world. This



equipment includes large Bucyrus-Monighan draglines, Bucyrus-Erie drills, dredges and excavators from 3/8-yard to 6-yards in iron, nickel, copper, lead, gold, bauxite, etc., mines. *In charge—J. H. Sackett.*

• **BULLARD COMPANY, E. D.**

Will exhibit safety equipment and supplies under the heading "Bullard Makes Safety News."

The Airlined Hard Boiled Hat will be featured, as well as a protective insole for rubber boot and shoe puncture resistance. Other improvements to be shown are new kit mounting brackets that adapt the Weatherproof and the Cylindrical First Aid Kits to a greater variety of handy locations and makes either kit removable. Willson Goggles and Respirators, as well as Wheat Electric Mine Safety Lamps will round out the display.

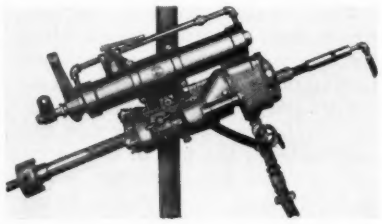
• **CARD IRON WORKS CO., THE C. S.**

Will show replicas in miniature of fifty mine cars of different designs and sizes ranging from 14 to 200 cubic feet capacity, that are being used in metal mine haulage.

Card Semi-Steel Heat-Treated Wheels of different designs will also be shown. *In charge—W. H. Bachman.*

• **CHICAGO PNEUMATIC TOOL CO.**

Will have the first public exhibition of the new lightweight "one-man" Diamond Core Drill—that handles just like a drifter—as an outstanding feature of the display.



This latest C. P. product will be surrounded by 18 different pieces of mining equipment including the latest self-rotating stopers, motorfeed drifters, sinker drills, demolition tools, sump pumps and rotary wrenches. *In charge—F. B. Ridley.*

• **CLEVELAND ROCK DRILL CO., THE**

Featured will be the MDR2 Mine Rig for mounting on a mine car. A short section of track will be laid with the conventional mine car on which the unit will be mounted. The MDR2 carries two arms on which drifters are mounted, which will allow drilling at practically any point of the drift. The new PD14 Drifter will be mounted on the rig arms. This machine, power fed with sliding cone guide shell, and of streamline design, will be shown for the first time at the Exposition.

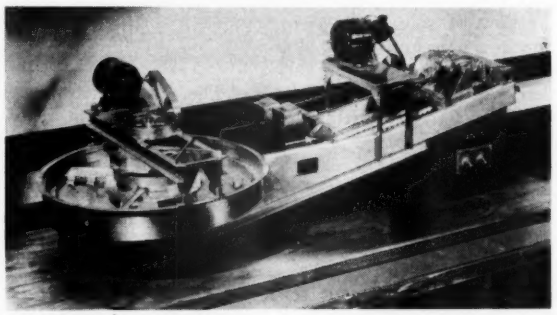
Other drifters to be shown are the light 3-inch D24, both power and hand fed, and the slightly heavier model D12, hand and power fed.

There will be a representative line of hand sinkers to show the company's latest developments in a new type of air feed and special jackhammer mountings.

The S11 and new SS22 stopers with both conventional and trip rotation will be part of the exhibit as well as a group of demolition tools. *In charge—Edward L. Oldham.*

• **DORR COMPANY, INC., THE**

The exhibit will consist of a number of scale working models of Dorr equipment, photographs and drawings of installations and a large, illuminated display piece illus-



trating, in flowsheet form, a typical Dorr installation at a combination flotation and cyanide gold mill.

Three types of classifiers will be on display—the heavy-duty Dorr FX, the Dorr Hiflow Classifier for coarse separations in the 4- to 35-mesh range, and the Dorr Bowl Classi-

fier for extremely fine separations ranging down to 325 mesh.

Two types of thickeners will be shown—the Dorr Balanced Tray Thickener, a multiple compartment unit giving maximum capacity per unit of floor area; and a Dorr Torq Thickener, a single compartment unit, with automatic raking arms which raise automatically in case of an overload.

Also to be shown are a model of the Dorrco V Type Pump, for removing sludge from sedimentation tanks, and a model of the Type A Agitator, extensively used for agitating cyanide slimes. *In charge—Alex D. Marriott.*

• DU PONT DE NEMOURS & CO., INC., E. I.

The exhibit sponsored by the Explosives Department of the du Pont Company, with the Fabrikoid Division cooperating, will feature a full size reproduction of a high explosives magazine, or "powder house." Visitors will be invited to enter the "magazine," inside of which will be found comfortable lounge facilities as well as a display of du Pont blasting accessories and literature descriptive of du Pont explosives and accessories for mining.

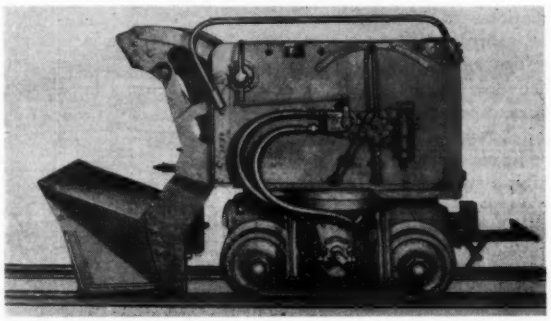
Outside of the magazine, the Fabrikoid Division will display "Ventube," flexible ventilating duct for mine ventilation. *In charge—C. J. Perry, Jr.*

• EDISON, INC., THOMAS A.

Will feature a display of Edison Steel Alkaline Storage Batteries for metal mine transportation. The construction of the Edison Storage Battery will be shown in a display of battery parts and in several cutaway cells typical of those used in metal mine service. *In charge—R. H. Weeks, Jr.*

• EIMCO CORPORATION, THE

Will exhibit the Model 21 Eimco-Finlay loader, and will show moving pictures of its operation in tunnels. These pictures will depict not only the mucking, but also enough



of the drilling, track-laying, timbering and car-handling operations to give a clear conception of the methods used.

Will also have "blown-up" photographs of loading machines—featuring especially the new Eimco Tunneloader which has a loading rate of more than three tons per minute. *In charge—E. G. Burger.*

• ELECTRIC STORAGE BATTERY CO., THE

Various types of Exide-Ironclad Batteries used for metal mine service in locomotives, trammers and shuttle cars, represented by cutaway cells, will be displayed by the company. Types MV and TL will be exhibited. These cutaway cells show detailed construction of the Exide cells. *In charge—T. H. Dooling.*

• ENGINEERING AND MINING JOURNAL

Since E. & M. J. this year is celebrating its 75th year of publication the exhibit will simulate a "Gay Nineties" western miner's cabin. Copies of the Diamond Jubilee number will be on display for distribution. *In charge—John W. Otterson.*

• FISKE BROTHERS REFINING CO.

Exhibit of the Lubriplate Division of the company will consist in part of a cutaway section of a speed reducer driven by an electric motor. This depicts the flow of lubricant in the speed reducer, not only for the lubrication of the gears but the bearings as well. The other moving

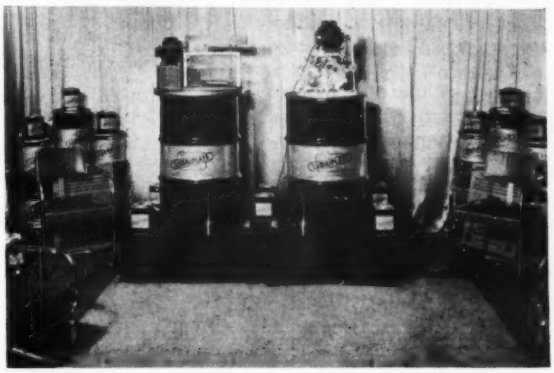


exhibit part consists of a glass case containing water and in which are cutaway sections of plain and ball bearings driven from an electric motor above by means of a roller chain. This will show the water resistance of these lubricants.

In addition to the aforementioned moving exhibits, various size packages of lubricants will be shown, as well as means of application.

• GARDNER-DENVER CO.

No description received.

• GENERAL ELECTRIC COMPANY

This exhibit will be called "The G-E Production Clinic," and will display equipment that the company has available for metal mines.

Featured will be operating demonstrations of the Tri-Clad motor, hook-on volt ammeter, and air circuit breaker, that are planned so that visitors may participate. *In charge—C. A. Binns.*

• GOODMAN MANUFACTURING CO.

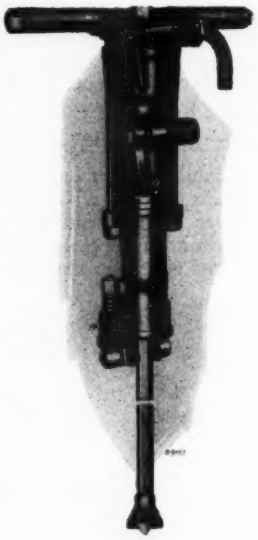
Will display a G-20 Shaker Conveyor Drive with motor and connecting or drive trough attached, similar to those now in service. The Shaker Drive will be operating.

The Mancha Storage Battery Locomotive Division of the company will exhibit Mancha's Little Trammer and Mancha's Titan A Locomotive. *In charge—J. D. James.*

• HERCULES POWDER CO.

The exhibit will consist of a rotating sphere recessed into four sections, each of which will contain an illuminated diorama set. The sets will represent typical phases in the mining of the four principal base metals—iron, copper, lead, and zinc—and in particular will illustrate the economical use of explosives in the mining of each of these metals. The National Defense theme will also be emphasized. *In charge—M. R. Budd.*

• **INGERSOLL-RAND CO.**



Will show a number of products from their extensive line of mining machinery. Included in these will be the newest rotating stopers, the Balanced R-48, R-58 and the Balanced hand-rotated HR-48, which has just been introduced. The "Easy-Holding" JB-5 Jackhammer and its little brother, the JB-4, along with the new CC-60 Cushioned-Air Paving Breaker will also be displayed. Other items shown or illustrated will include I-R Drifters, Cameron Pumps, air and electric-driven scraper hoists, blowers, compressors, pneumatic tools, etc. Jackbits will also be displayed. *In charge—L. D. Knight, W. C. Collyer and L. H. Geyer.*

• **JEFFREY MANUFACTURING CO., THE**

Will have available literature describing the company's extensive line of equipment, and resting facilities for those who wish to "take it easy."

• **LINK-BELT COMPANY.**

The products on display at this exhibit will include troughing, self-aligning, and rubber-tread belt conveyor idlers of the latest design. Also—Friction Fighter roller bearings, silent and roller chain drives, takeups, couplings, and other mechanical power transmission units. *In charge—W. E. Philips.*

• **MANCHA STORAGE BATTERY LOCOMOTIVE CO.**

See Goodman Manufacturing Co.

• **MACWHYTE COMPANY.**

No description received.

• **MARION STEAM SHOVEL CO., THE**

The booth will contain a built up background in which will be mounted a big enlargement showing one of the Type 4161—5 cu. yd. shovels in operation at a western open-pit mine, and as supplied to other mining companies. *In charge—L. C. Mosley.*

• **MERCO NORDSTROM VALVE CO.**

No description received.

• **MINE SAFETY APPLIANCES CO.**

The company will feature miner's personal protective equipment in its display, including the Model "P" Edison Electric Cap Lamp, Skullgard Hats and Caps, Safety Shoes and Pacs, Goggles, and Comfo and Dustfoe Dust Respirators; also Miner's First Aid Kits and Cabinets for every emergency.

In addition, those in attendance will see M.S.A. Self-Contained Oxygen Breathing Apparatus, gas detecting and indicating instruments, dust sampling and analyzing equipment, All-Service Gas Masks, H-H Inhalator, Air-Mover, and other safety products. *In charge—K. S. Butler.*

• **MINING CONGRESS JOURNAL**

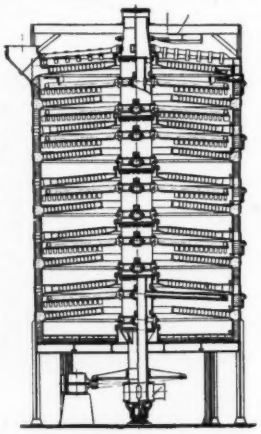
Will have a display featuring the service of the Journal to the mining industry. Copies of the September Metal Mining Convention and Exposition will be distributed, which will include not only articles of particular interest to metal mining men, but announcements of the convention program and events, together with a preview of the exhibits to be displayed.

• **OLIVER UNITED FILTERS, INC.**

No description received.

• **PACIFIC FOUNDRY CO., LTD.**

Will feature the Nichols Herreshoff ore roasting furnace and will display a working model (no fuel will be burned) of an installation. This model is equipped with a transparent side wall of Lucite so that the rabble arms, rabble teeth, etc., can be observed in motion. Also on display will be samples of mine run ore, milled ore or concentrates as delivered to Nichols Herreshoff furnaces and specimens of calcined ore and concentrates. In addition the Company will exhibit a small laboratory type of Nichols Herreshoff furnace which is known as a Herreshoffing Unit. This is a single hearth gas fired or electrically heated furnace suitable for small scale experimental roasting and calcining tests.

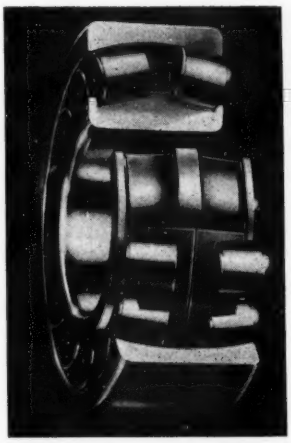


Will also show one or two products that are manufactured of acid resisting alloy Corrosiron, as well as some products made of the heat resisting alloy Pyrocast and some Nihard parts used for grinding mills and pumps handling abrasive material, etc. *In charge—George E. Connolly.*

• **ROEBLING'S SONS CO., JOHN A.**

Will have an exhibit of samples of Wire Rope, Wire Rope Fittings, Electrical Wires and Cables, and Woven Wire Fabrics. There will also be educational literature for distribution covering the company's products. *In charge—E. A. Trask.*

• SKF INDUSTRIES, INC.



The one-bearing trunnion roller will be exhibited, along with a complete line of ball and roller bearings and transmission appliances. The design of the one-bearing trunnion roller permits the dynamic equilibrium of the bearing to maintain the roller in its correct running position. *In charge—R. C. Byler.*

• STANDARD OIL CO. OF CALIFORNIA

No description received.

• STEPHENS-ADAMSON MANUFACTURING CO.

Will demonstrate a working model of the power-driven AMSCO Manganese Feeder and will exhibit the Sacon Carrier, a belt conveyor troughing carrier built for extremely heavy conveying jobs.

Also in the exhibit will be the company's Pacific Carrier, Timken mounted, as well as the Sealmaster anti-friction bearings made in pillow blocks, flange and takeup bearing types. *In charge—R. J. Cooper, Ed. O'Brien and R. J. Cooper, Jr.*

• SULLIVAN MACHINERY COMPANY

Will have a complete line of mining machinery on exhibit. Among the featured machines are the following:

A new dual-valve, 3½ inch bore drifter type rock drill which incorporates the Sullivan piston-motor feed.

Two improved stoper drills—the self-supporting Safe-T-Stoper and the S-91 Dual Valve Stoper.

A new Portable Scraper Hauler, weighing only 250 pounds, with either electric or Turbinair Motor.

The Mine Car Loader, which presents several new improvements.

The improved No. 6 air-driven, One-Man Core Drill—underground type. Also the No. 12 gasoline driven Surface Type Core Drill.

The new electric-driven "Torpedo" blast hole drill.

Several of these machines will be operated from a "Unit-air," 105-ft. stationary type Compressor. Several other pneumatic tools and hoists will be on exhibit.

• TAMPING BAG COMPANY, THE

Will have on display samples of Seal-Tite Tamping Bags. *In charge—A. E. Pickard.*

• TEXAS COMPANY.

No description received. *In charge—J. G. McLeod.*

• UNION WIRE ROPE CORPORATION

Will have on display illuminated transparencies, as well as samples showing various rope constructions to stimulate the study of the proper type of rope for various uses. There will also be displayed educational bulletins, "Rope Dope," as well as booklets, "The Care and Handling of Wire Rope;" "Socketing Wire Rope;" and "Splicing Wire Rope." *In charge—W. Evans Powell.*

• U. S. BUREAU OF MINES.

No description received.

• VICTAULIC COMPANY OF AMERICA

The company will demonstrate with several motor-driven operating models the speed, flexibility, and tightness of Victaulic Couplings.

Another feature of the exhibit will be Full-Flow Fittings which provide for full flow with a minimum of friction loss. Included in these items are several time and money savers such as the Adjustable Elbow which is readily swiveled on the job for any angle from 0° to 45°. *In charge—M. C. Hutchinson, R. W. English and Gene McIntyre.*

• WESTERN MACHINERY COMPANY

Will have as a main feature a 16-in. Wemco Screw Classifier. There will be sections showing the two point lubrication system of the over-sized improved bearings, one of which is a grease packed submerged ball bearing and the other of babbitt lubricated through an exclusive Wemco constant take-up lubrication system.

Another item to be featured is the new improved simplex diaphragm pump. *In charge—Roger Loutz.*

• WESTINGHOUSE ELECTRIC & MANUFACTURING CO.

Will have on display:

1. New "Midget" locomotive, the country's smallest battery operated locomotive.

2. Operating display of a new AC adjustable speed drive, especially applicable to mining and metal working processes.

3. Line materials. A display of the more important line materials used in the mining industry will be shown. A complete line of clamps, insulated hangers and expansion bolts are a few of the items to be exhibited.

4. Operating replica of a flotation cell powered by a 5-hp. vertically-mounted Westinghouse gear motor. A fluorescent lighting unit will be in operation over the cell. *In charge—Harlan F. Horne.*

• WOOD SHOVEL & TOOL CO.

No description received.

E. I. du Pont de Nemours discussing the location of the first Du Pont powder mill with Thomas Jefferson, President of the United States, his friend and customer. From a painting by S. M. Arthurs.

Du Pont Explosives...*in the long rifles of the pioneers of yesterday*... in the mines that are America's defense today!

TODAY is very much like the world of 1800. That was the year the Du Pont family came to America, fleeing a Europe racked by war and revolution. The Reign of Terror had ruined their business. Their closest friend, the great chemist Lavoisier, had been beheaded.

In America, E. I. du Pont discovered that our powder mills were small, poorly run and out-of-date — that we were dependent on England for the best gunpowder. Relying on his training under Lavoisier and encouraged by the family friendship with Thomas Jefferson, he resolved to establish powder mills here equal to those of Europe. The outcome was the founding in 1802 of E. I. du Pont de Nemours & Company.

In the 139 years that have followed, Du Pont's resources and technical skill have been at the nation's command in peace and in war. In these many years, Du Pont explosives and blasting accessories have contributed mightily to building America — have made possible mining, quarrying, construction, land clearance and oil prospecting on an ever expanding scale.

Today, with mining a vital arm of America's National Defense, Du Pont explosives are helping to deliver the coal and the ores America needs — quickly, efficiently and at minimum cost.

An Invitation

• • • Drop in and see us at the Metal Show, Fairmont Hotel, San Francisco, September 29 to October 2. We'll be at booths 403 and 404.

139 YEARS OF DU PONT EXPLOSIVES LEADERSHIP

LEAVES FROM CYANAMID'S ORE DRESSING SCRAPBOOK

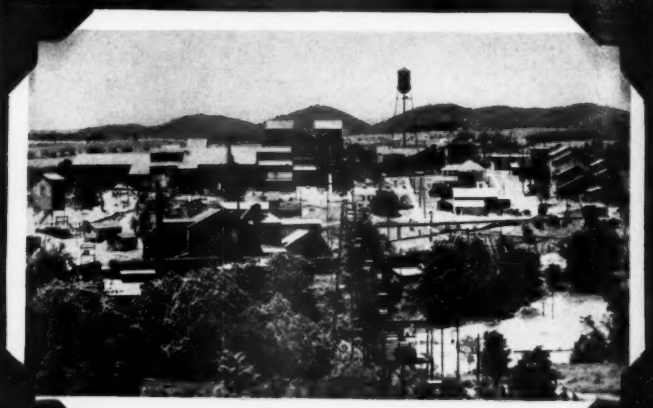
1917—Cyanamid's Metallurgical Chemical Division founded. First product, Aero Brand Cyanide—first user, Cia de Real del Monte Y Pachuca.

1922—First Cyanamid Ore Dressing Laboratory. Housed on a dock at Warners, N. J., what it lacked in equipment it made up in convenience. Tailings disposed thru a handy trap-door to river below.

1924—Cyanamid enters the flotation field supplying cyanide for differential flotation of complex base-metal ores. Early user was Custom Concentrator of International Smelting Company at Tooele, Utah.

1926—Cyanamid begins commercial production of Aerofloat Reagents at its Warners, N.J., plant.

1926—Moving day! For the second time in four years the Cyanamid Ore Dressing Laboratory needs larger quarters. Chemical, physical and microscopical departments provided.



1928—Another step forward. Dry Aerofloat Flotation Reagents used at Mascot Mill of American Zinc, Lead and Smelting Company.

1933—Cyanamid's first installation of Fagergren Flotation Machines in the Kirkland Lake, Ontario plant of Wright-Hargreaves Mines.

1934—Fagergren Machines used to beneficiate cement rock at plant of Valley Forge Cement Company.

1935—Heavy Media Separation (Sink-Float) Process installed at Mascot Mill of American Zinc, Lead and Smelting Company.

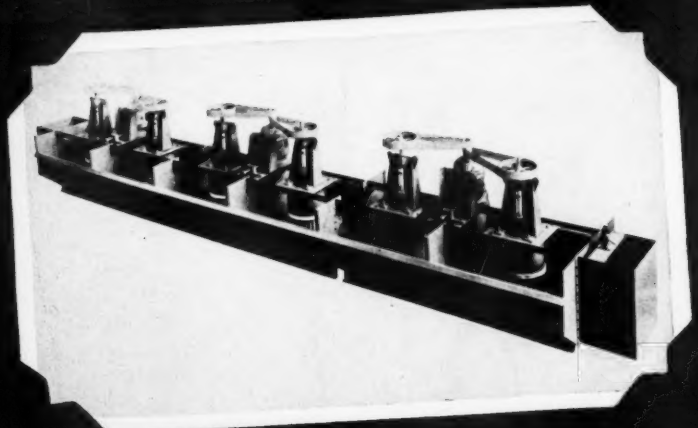
1937—Cyanamid enters non-metallic flotation reagent field with 700 Series Reagents. First large user—Cyanamid's Brewster, Florida, phosphate rock plant.

1937—Still larger quarters for the Cyanamid Ore Dressing Laboratory. Physical, Chemical and Microscopical research equipment augmented and modernized and personnel increased for the study of metallurgical and ore dressing problems.

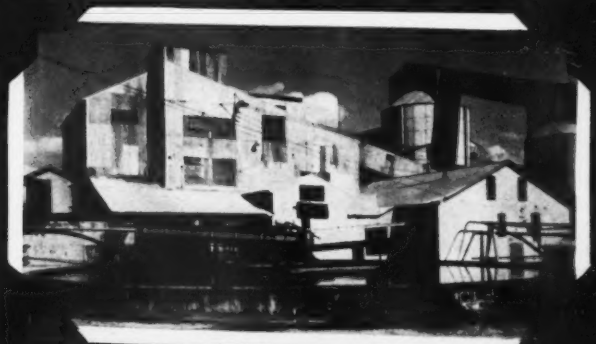
1938—Heavy Media Separation (Sink-Float) Process comes to the Minnesota Iron Ranges. Butler Brothers' Harrison Concentrator uses ferrosilicon as heavy medium to treat a million tons of crude iron ore annually.

1937—Cyanamid's Carbon-Depressors—600 Series Reagents—used on California's Mother Lode to help solve the problem of cyaniding carbonaceous gold ores.

1938—Two improved Aerofloat Reagents introduced as a result of research in Cyanamid Ore Dressing Laboratory.



1941—Level Type Fagergren Flotation Machines installed to concentrate gold, copper, lead, zinc, phosphate and manganese ores.



1939—Heavy Media Separation (Sink-Float) Process using galena is installed at world's largest zinc concentrator—Central Mill of Eagle-Picher Mining and Smelting Company.

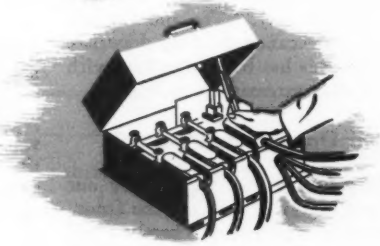
4 Ways

to insure continuous production with complete O-B protection—

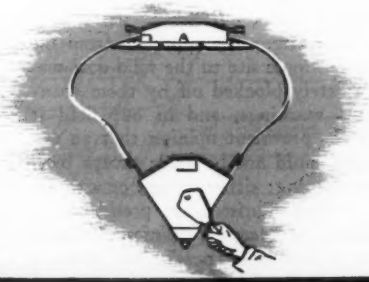
1 Keep conveyors operating efficiently, safely with O-B Type AD, ADG (Gasproof), and KAD Automatic D. C. Motor Controls.

2 Eliminate cable burnouts and motor overloads with foolproof O-B Fused Trolley Taps, available in several styles.

3 Isolate electrical break-downs and protect each face circuit with Type B Fused Interlocking Multiple Junction Boxes.



4 Sectionalize each working area by means of an O-B Metal Underrun Section Insulator and Safety Feeder Switch.



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OHIO B BRASS

MANSFIELD OHIO · U · S · A

Canadian Ohio Brass Company, Ltd. Niagara Falls, Ont., Canada

COMPLETE O-B PROTECTION FOR CONTINUOUS PRODUCTION

Development With MECHANICAL LOADING at the Christopher Coal Company

● ***A description of the operation at No. 3 Mine which, for more than a year and a half, has produced a large tonnage of coal at an economic cost entirely from main entry development.***

E. J. KANE
Chief Engineer

E. H. ONEIL
Superintendent

THE Christopher Coal Company's Mine No. 3 is working entirely on development; driving a series of main entries. The mine is projected for a retreating system and the development, which is with track mounted loading and cutting machines, will continue on its present plan until the property line has been reached. In spite of the fact that the tonnage is coming entirely from entries, the operation is on a productive and profitable basis—producing an average of more than 100,000 tons per month.

The plant is located in the Scots Run field of northern West Virginia. The seam mined is the Pittsburgh, which has 6 ft. of merchantable coal, outcropping at tipple height and is entered through a drift opening. There are the usual characteristic small impurities, as shown in the seam section in Figure 1, but these partings can be removed by hand picking at the tipple. The underground conditions in general are favorable, the grades are light and the drainage easy. The most severe difficulty is occasioned by the drawslate roof, but this has been overcome with regular and systematic timbering.

Opening the Mine

This property was acquired by our company in May, 1939, and the frontage or outcrop portion had been worked out by another company that had operated for a number of years with hand loading. The approach from the present tipple site to the solid coal was completely blocked off by these abandoned workings, and in our field it was the prevalent opinion that an entrance could not be made except by a new opening; either a slope or a shaft. Mr. Frank Christopher, president, in defiance of accepted opinion, believed that it would be possible to make a haulage way through these abandoned workings and, in acordance with his instructions, work on the project was started in May, 1939. This involved using old entries where possible to clean them of the fallen slate and, where this was not feasible, it was necessary to drive through standing pillars and, in some instances, through pillar falls. The total length was about one mile and it was quite an undertaking, particularly in view of the fact that the haulway was to be built for high speed service, and sharp curves could not be permitted. The job was completed in seven months, by December, 1939, and the haulway as it now stands, while not in a straight line, nevertheless has easy curves, is well timbered or cribbed, and is expected to prove adequate for the life of the remainder of the property.

The policy of our company is to use a retreating mining system, so after the haulway had been reconstructed and the solid coal was reached, there was a distance of about two miles to drive before reaching the property limit. Our work for the past 18 months has been to push this entry development; the main entries have now advanced to within 1,800 ft. of the property line.

Development Plan

In order to secure a large tonnage during this development period, a total of sixteen main entries, including airways, were driven, divided into four units of four headings each. This number was later increased to five entries per unit; this is shown on the map in Figure 2, and a detailed explanation is not necessary. Besides the operations shown on this map, there are three other sections developing the area to the right of the mains.

Each five-entry set is worked as an operating unit and the three units are advanced simultaneously; under this system a large production of development coal is concentrated into a small working area. All entries and crosscuts are driven 12 ft. wide on 90-ft. centers and turned on 60° angles. This first mining develops the area into blocks approximately 78 ft. square, or rather diamond-shaped, and these solid blocks will be recovered on the retreat —either by open end slabbing or by crosscuts; depending on roof conditions. The map also shows the plan projected for working the room panels to the left of the main heading.

Unit Equipment

All loading and cutting machines are track mounted. Each operating unit of five entries has one Goodman track-mounted mobile loader, one

Jeffrey or Sullivan track-mounted cutting and shearing machine, one Jeffrey 8-ton trolley-reel gathering locomotive, and one Jeffrey electric hand drill. A 13-ton Goodman locomotive is used for the intermediate haulage between the faces and the main line.

The mine was originally equipped with 6-ton drop-bottom cars, but these were subsequently transferred to another operation of our company, and replaced by cars of solid type construction which are unloaded by rotary dump at the tipple. The new cars, furnished by the Differential Car Company, are 16 ft. 11 in. long, 7 ft. wide, with a height of 46½ in. above the rail and have a mechanically loaded capacity of 8 tons of coal. They are equipped with two trucks of four wheels each, mounted at each end and swiveled so as to operate over short radius curves. The couplers are automatic with spring bumpers and the trucks also have spring cushions.

There are six mechanical loading units operating in the mine and two 15-ton Goodman main line locomotives serve these six units, hauling an average distance of two miles from the main line side track to the tipple. A main line trip has 15 cars and a locomotive usually makes 16 to 18 round trips per shift. There are a total of 100 mine cars in operation, and each car averages 2½ round trips per shift.

Operating Crew and Supervision

A unit crew consists of three men for cutting and drilling, one shot firer who also cleans the kerf, two men on the loading machine, two men on the gathering locomotive, five men for track and timbering, and one unit boss —a total of 14 for the entire crew. In addition, one relay locomotive with a crew of two men serves three loading units.

Adequate supervision is recognized by our company as a primary necessity for a successful operation, and besides the individual crew bosses as mentioned above, there is a section foreman who has charge of the three units. Over these men there is of course the regular mine foreman. All the above is duplicated on each of the three shifts.

Face Operations

A face is undercut and sheared on the right hand rib, using a track-mounted machine with a 9-ft. cutter bar. Normally this operation is not too difficult, but occasionally small bands or lenses of sulphur are encountered, and in such cases it often is necessary to change the bits during a cut. Various types of bit material, including hard alloy tipping, have been

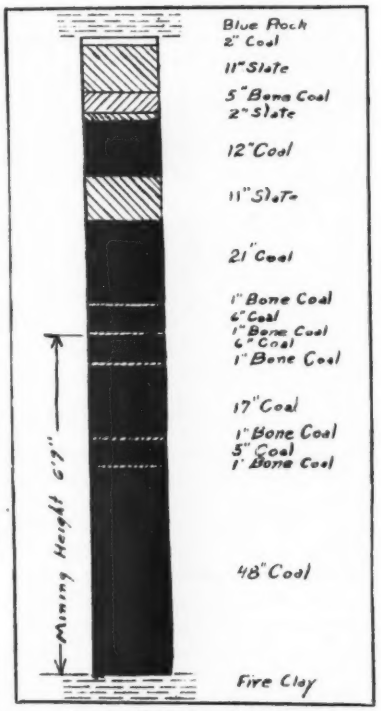


Fig. 1. Typical section of seam

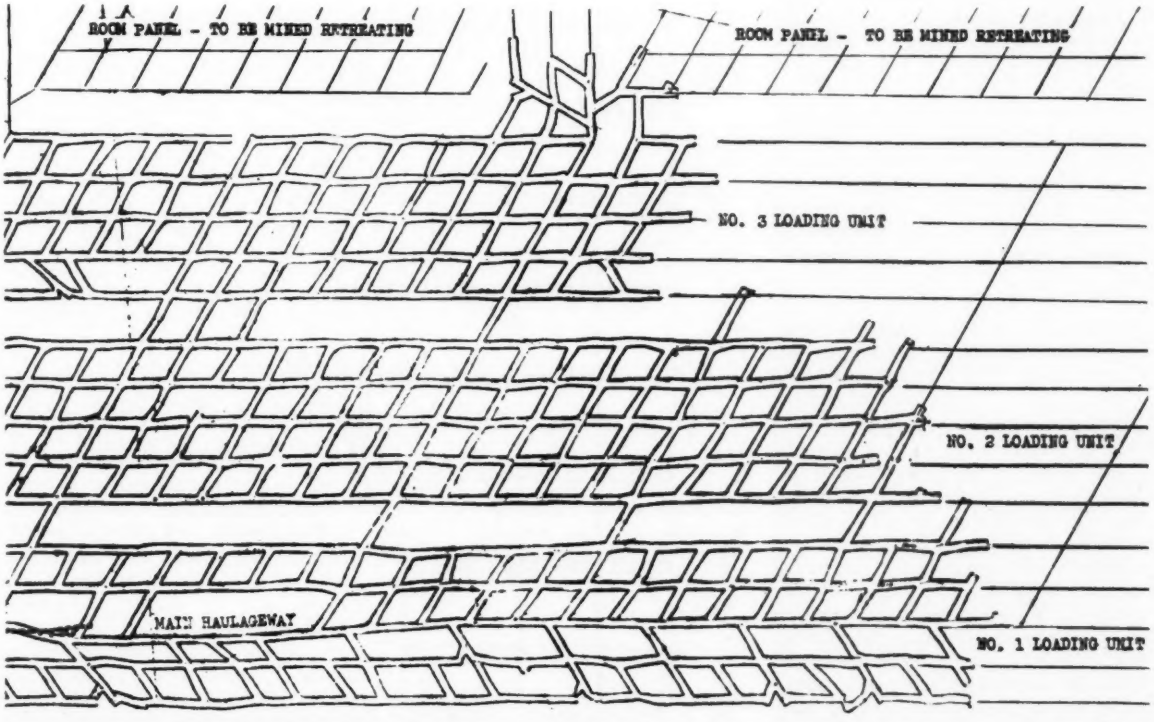


Fig. 2. Development of main entries with track mounted mechanical loaders. All places 12 ft. wide, on 90-ft. centers and at 60° angles

tried to overcome the cutting in the sulphur bands, but none of these methods has met with success. Our general practice, therefore, is to use the standard machine sharpened bits.

Drilling is done with an electric hand drill, placing one hole in the upper left hand "tight" corner, and the second hole about midway between that point and the shear cut on the right hand rib. At times a third hole may be required, but this is the exception rather than the rule, as two shots break the coal down satisfactorily for the machine loading. All blasting is with permissible explosives.

Loading and Service Haulage

Loading is with track-mounted mobile machines, and no particular difficulties are encountered in this operation. The large capacity mine cars and the location of nearby switches reduce the car changes to a low figure, and the comparatively narrow working places require very little maneuvering for the loading machine head. Because of the concentrated workings, the tramming distance between places does not involve any undue loss of time and, as subsequently described, the system of timbering with posts and cross bars eliminates delays from this source.

Each loading machine is served with an 8-ton trolley-reel gathering locomotive which takes the cars from the face to the relay motor. As will be noted from the plan in Figure 2, all places are turned on 90-ft. centers, and this provides storage space for individual car changing within a very short distance of the working face. After a place has been cleaned up, the service locomotive then takes the loads to a nearby room, usually the first completed room back of the live territory, and at this point the relay motor picks up the cars for delivery to the main line. One 13-ton relay motor serves three loading units. The following time study summary shows an average performance for the cutting and loading.

Delivery of Supplies

An important point sometimes overlooked by mechanized mines, is the necessity for having supplies for the working crews at all times, as nothing tends to lower the morale of the men more than the failure on the part of the company to supply them with the tools and facilities for efficient work. Our policy in this respect is very rigid and each shift always has the proper amount of materials on hand—lubricants, explosives, wiring and track material—so that there can be no excuses for delays from this source. Because of the narrow entries, it is difficult to store timber at the working places; a supply is carried in a mine car next to the service locomotive in its regular trips, and unloaded at the working faces when needed.

Track material is taken up from a room or crosscut after the place is no longer needed; this is done regularly and systematically, usually once a week on Sunday, and we have no worked-out places with the track or wire remaining in them. The material on hand is therefore reduced to the actual amount required for the operation and the cost of this item is correspondingly low.

Average Time Study Summaries

Goodman Track Mounted Loading Machines

Average loading time of car	3 Min. 48 Sec.
Average changing time of car	1 Min. 0 Sec.
Average tramming time for machine	3 Min. 33 Sec.
Average tramming distance	219 Ft.
Average car changing distance	90 Ft.
Average weight of car	8 Tons

Sullivan 7 AU Cutting Machines

Average time for bottom cut	9 Min. 42 Sec.
Average time for shearing	6 Min. 33 Sec.
Average time for drilling	6 Min. 40 Sec.
Average time to set bits	8 Min. 0 Sec.
Average width of places	12 Ft.

NOTE: Many sulphur balls are encountered in cutting, particularly in the shearing, which causes the actual cutting time of a place to vary considerably.

Track

There are three classes of track construction: (1) main haulage from the tipple to the main side track; (2) secondary or relay haulage from the main side track to the active workings; and (3) the service haulage leading from the faces to the secondary tracks. The main line has 85-lb. rail, and the secondary track has 70-lb. rail; these are laid on untreated wood ties 5 in. by 6 in. by 7 ft.—spaced on 20-in.

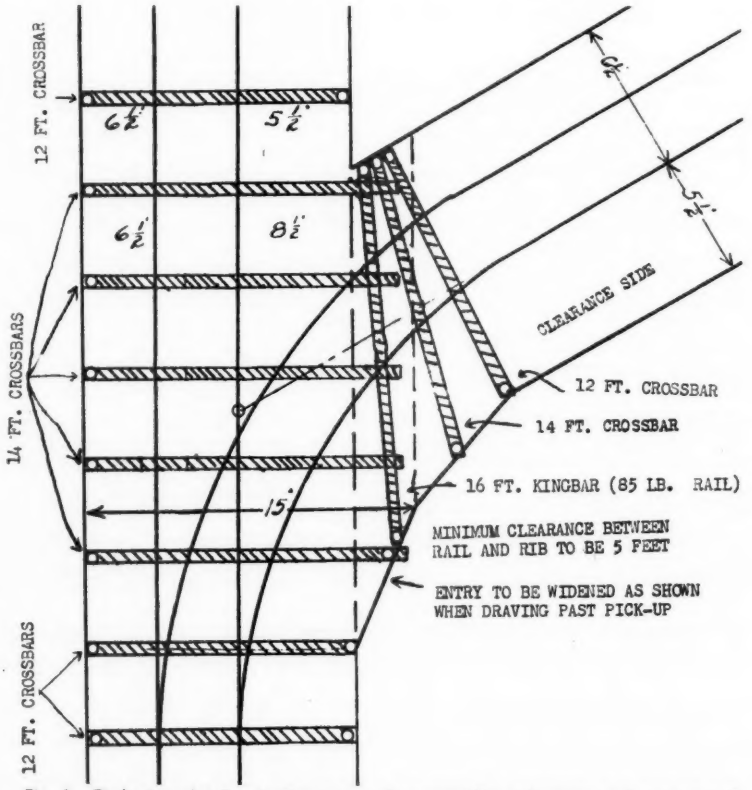


Fig. 3. Timbering plan for starting a new place providing adequate roof support and walkway clearance

Photo courtesy Differential Steel Car Co.

Eight-ton double-truck steel mine cars

centers. The service haulage has 40-lb. rail laid on steel ties, spaced 3 ft. centers. The 40-lb. service track is of course extended after each cut and, once a week, on every Sunday, a track crew extends the 70-lb. rail in the secondary haulage so as to keep it within a short distance of the working faces, and thus reduce the travel of the service locomotive. This is an integral part of the general mining system and is closely adhered to.

No. 2 turnouts are used in the service and secondary haulage; these are laid on regular wood ties under the 70-lb. rail, and on special steel switch ties under the 40-lb. rail. The track gage is 42 in.

Timbering

The mine has the top characteristic of the Pittsburgh seam in this region; about 12 in. of roof coal above which is a drawslate of varying thickness—from a few inches to more than 2 ft. The roof coal is of inferior quality and it is customary to leave this unmined, which helps to keep the drawslate in place. Under normal average conditions, the top, while not good, can be held with a moderate amount of timbering, providing this is done systematically and as soon as possible after the face has been cleaned up. With a 9-ft. cutter bar, our depth of cut is about 8 ft. and our usual practice is to have two sets of timbers, on 4-ft. centers for each cut. A timber set consists of a 5-in. by 7-in. by 12-ft. crossbar supported on 5-in. round posts; under extremely heavy roof, the size of these are increased, and in addition, it is at times necessary to use intermediate sets between the standard 4-ft. spacing. The timbers are placed 4 ft. from the face before the cut is made, and with track-mounted equipment, this gives adequate clearance as well as protection for the subsequent cutting and loading operations.

Walkway Clearance

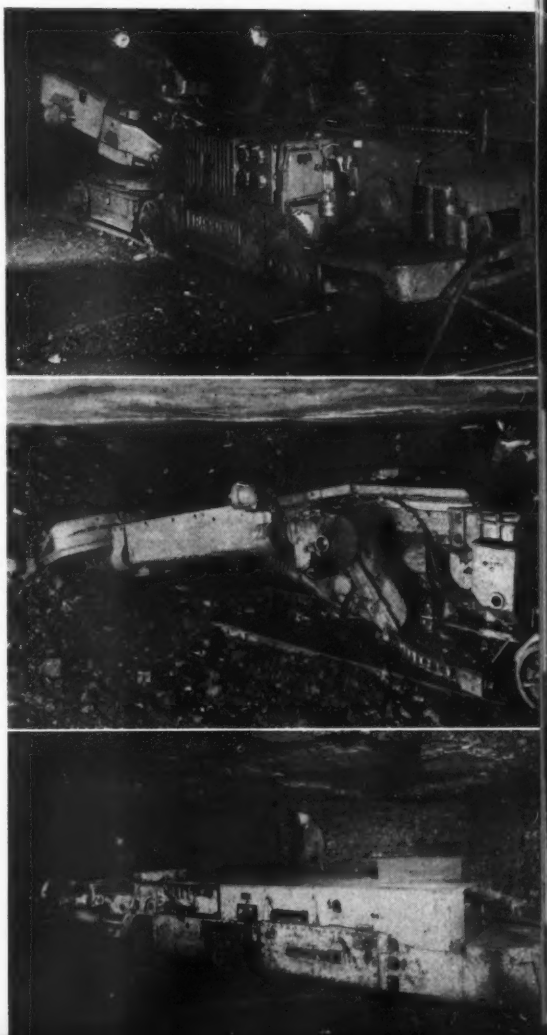
All entries are driven 12 ft. wide; the track is laid to the left of the center so as to leave a 3-ft. walkway on the right between the side of the car and the posts. A new problem of side clearance on curves, arose in connection with the long mine cars. A single-truck car pivots on its center, while a two-truck car has two pivot points, one on each end; this means that when rounding a curve, the side of the two-truck car is the point which comes closest to the rib, rather than the front end as in a single truck. In order to provide necessary clearance for the walkway on a curve and at the same time to have proper roof support when an entry or room neck was being driven, we developed a special method of cutting and timbering which is illustrated in Figure 3.

As shown on this sketch, in starting to drive a turnout, the straight heading is widened 3 ft. and crossbars 14 ft. long are set, instead of the usual 12-ft. length. This wide cut continues until the inbye rib of the new entry has been passed. After this point is reached, a 16½-ft. king bar (85-lb. rail) is set approximately parallel to the straight heading and spanning the neck; this bar is placed so as to support the ends of the special 14-ft. crossbars in the heading, and the temporary posts under the ends of these crossbars are then removed. The new place is then ready for advancing with adequate roof support; the first cut, as shown on the sketch, is slightly tapered and after that, the cuts are made on center and advance in the regular manner with standard timber sets. This plan and the dimensions have been carefully calculated so as to provide proper clearance between the rib and the side of the car when rounding the curve. The sketch is for an entry turning to the right; when turning to the left the clearance is required on the inbye instead of the outbye side; this requires a slight modification from the plan as shown, but the general principle of timbering and cutting is the same.

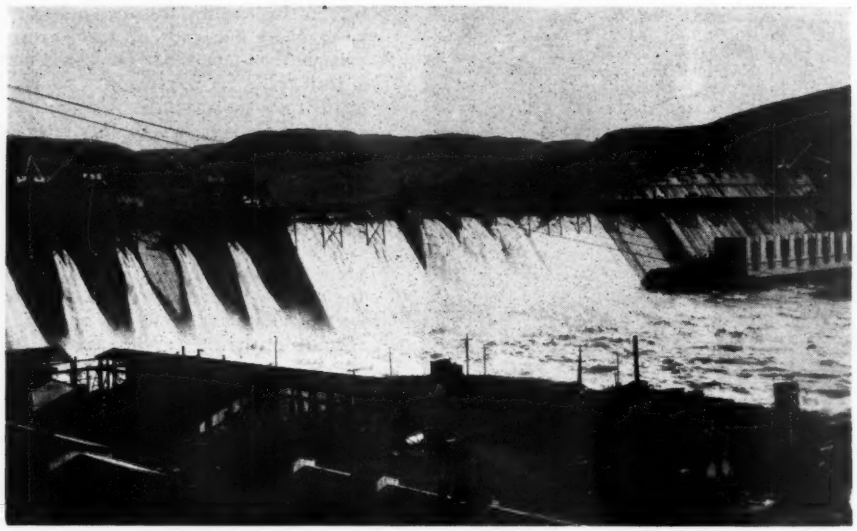
Wiring

A primary requirement for successful mechanical mining is adequate power and our company is fortunate in having this fact recognized by our

(*Continued on page 73*)



Shearing, loading and cutting with track mounted machines. Photos by courtesy of: Upper—Jeffrey Mfg. Co. Center—Goodman Mfg. Co. Lower—Sullivan Mch. Co.



Grand Coulee Dam on the Columbia River, under construction

Electrometallurgy in Washington State

By A. E. DRUCKER
Director, Mining Experiment Station and
State Electrometallurgical Research Laboratories

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The availability of large amounts of low-cost power from Bonneville and Grand Coulee dams, the existence of extensive deposits of minerals from which metals may be produced by electro-metallurgical methods, and the planned and proposed tremendous expansion in production of aluminum and magnesium have all served to bring the Pacific Northwest into the limelight. It now seems undoubted that this combination of favorable factors will make Washington State one of the main centers for the production of aluminum and magnesium.

Experimental work carried on for years at Washington State College has now resulted in the development to the pilot plant stage of an improved process for the production of magnesium. This process may soon be adopted for large commercial scale operations.

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THE future development of the chemical and electrometallurgical industries in this region will depend, first, upon the development of our low-priced water power resources; second, upon economic surveys to determine the extent and character of the known mineral deposits; third, upon proper laboratory investigations to work out the economic metallurgical methods of extraction; fourth, checking the results of the laboratory by commercial (pilot-plant) tests; fifth, a survey of markets for products; and sixth, a consideration of the problem of costs, transportation, and taxes. The Grand Coulee project will furnish primary (firm) power at a cost of about 1.65 to 2 mills per kilowatt hour for such industries—a price which will be possibly the cheapest in the nation and corresponding favorably to the low costs in Quebec, Canada, and Norway where similar industries have attained great importance because of the availability of low-priced power.

Washington State College is conducting surveys and experiments so that this low-cost hydroelectric power may be effectively utilized in the production of light metals, alloys and fabricated products, electrolytic manganese, chromium salts, electrothermic zinc, iron and steel from scrap iron, calcium carbide, fused silica glass brick, light-weight airplanes, busses, trucks, etc., from our known reserves of raw materials in Washington and the Pacific Northwest. The State College of Washington Research Foundation has been organized to promote metallurgical research and research in other departments of the institution. All patents from discoveries or inventions are to be assigned to the Foundation which provides funds for its operation—staff, supplies and equipment. The increasing importance of the lighter metals, aluminum and magnesium, for use as alloys in construction makes the results of these experiments important to this region. There are large deposits of raw materials in Washington for the production of magnesium and aluminum metals; these can be developed under the present conditions, and can be made available with cheap power from the Coulee Dam and new methods of extraction now being developed.

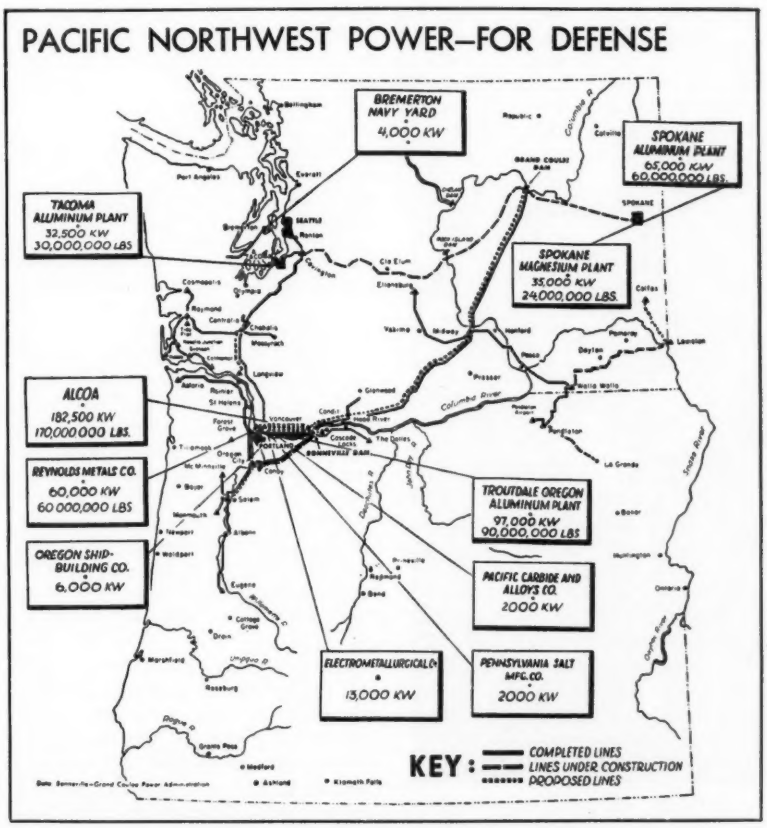
Bauxite Supply is Limited

There is more aluminum in the earth's crust than any other industrial metal, but the usable supply of suitable bauxite ore is limited by present methods of extraction. Bauxite is the only ore at the present time that can

be employed in the manufacture of aluminum under existing commercial production methods. It occurs at a number of different places in the world, but high-grade deposits low in silica are not numerous. The present process is confined to bauxite containing less than about 3 percent silica, it is for this reason that our reserves of bauxite ore in this country are very limited, since the supply of material containing less than 3 percent of silica is not as great as is desirable for future demands. There are no known suitable deposits of bauxite within our western states and in fact, suitable bauxite deposits in this country are fast being exhausted. Producers are now largely forced to go to Dutch Guiana in South America to obtain a suitable grade. The Aluminum Company of America has now erected an aluminum reduction plant at Vancouver, Wash. Also at Longview, near the same location, the Reynolds Metals Company is erecting an aluminum plant. These metal industries will gradually expand in the near future. The bauxite ores from Dutch Guiana, South America, after refining at Mobile or East St. Louis will be transported by railroad to these plants. Other aluminum plants are planned for Spokane and Tacoma. This state is designed to become a large aluminum producing center in the future, utilizing bauxite, alunite and clay ores.

Aluminum May be Produced from Other Raw Materials

Very large deposits of suitable clays with high-alumina (30 to 40 percent) and low iron content are to be found in eastern Washington and northern Idaho, and, with the development of economic methods of extraction for aluminum and other available by-products such as high-grade kaolin, silica sand, muscovite mica, aluminum sulphate and alumina, and low-cost power, these extensive clay beds after washing, should in the near future become of considerable value. With the low-cost power (1.65 to 2.0 mills) being made available through the Grand Coulee project, the Northwest has every opportunity of becoming a large future aluminum producing center of the nation; the same opportunity in the very near future awaits Washington in the field of ultra-light magnesium metal and alloy production from magnesite.



Reproduced from Business Week, August 2, 1941

Large Deposits of Magnesite Available

We have in Washington, so far as is known at the present time, the greatest known magnesite deposits (includes milling low-grade ores 15 to 26 percent magnesium metal content) of economic importance in the United States. These magnesium ore deposits in Stevens County can be utilized in consuming very large amounts of Grand Coulee power. Magnesium metal, extracted from Manchurian magnesite ore, is now being utilized in Japan for aircraft construction. It is a lighter metal (35 percent) than aluminum, possessing similar qualities and in some ways superior properties. At the present time magnesium metal produced from the salt brines of Michigan is on a competitive price basis (volume for volume) with aluminum. Aluminum in carload lots sells for about 17 to 20 cents a pound while magnesium in similar amounts sells for about 27 to 30 cents a pound. Magnesium is less than two-thirds the weight of aluminum.

Research Carried on for Years

Realizing the potential importance of the large magnesium bearing deposits of the State, there has been carried on at State College for years a program of research for a means of reducing these ores on a commercial scale. In 1936 the State electrometallurgical research laboratories secured the cooperation of the United States Bureau of Mines in the search for an economical method for recovering magnesium from the Stevens County magnesite deposits. H. A. Doerner was named to direct this work for the Bureau.

Most of the funds for the first three years were supplied by Washington State College through the mining experiment station, established April 1, 1937.

As laboratory experimentation and research indicated that a logically successful method was being developed, Congress appropriated $35,000 to continue the magnesium research from July 1, 1939, to July 1, 1940, on a pilot-plant scale.

Further congressional appropriations totaling $39,800 followed.

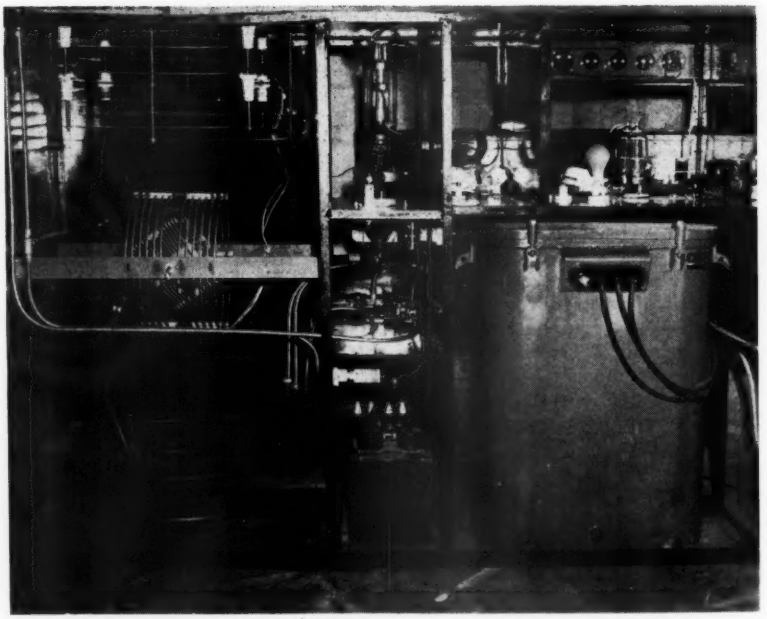
Electric Furnace Arc Distillation Process for Magnesium Metal

The process developed as a result of this research, is briefly described as follows:

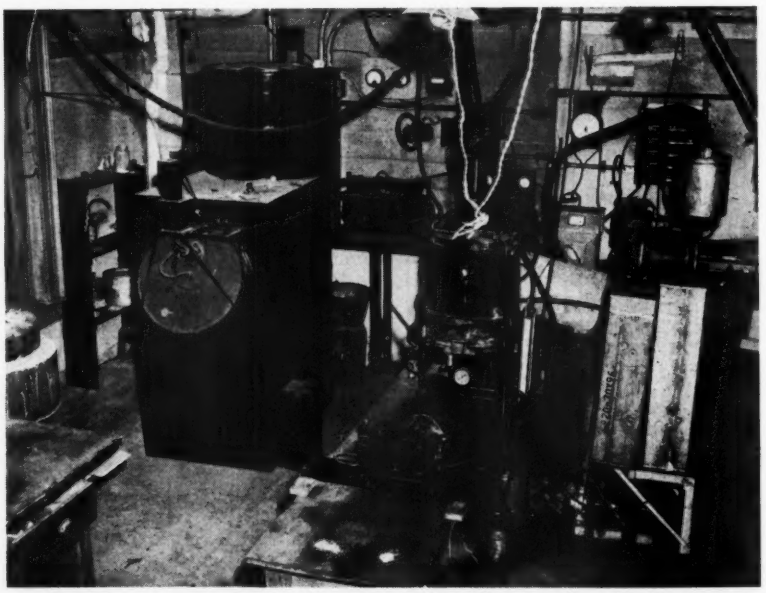
Crude magnesite ore, pulverized and treated by two-stage flotation yields high-grade magnesite concentrate. This is calcined * and then mixed with a small amount (30 percent) of carbon (charcoal, coke or coal) and fed into a reaction chamber heated to 2300 degrees C. by an electric arc. At this temperature the ore is reduced and vaporized. The vapors escaping from the furnace are instantaneously chilled in an oil spray to 200 degrees C., and the fine magnesium metal powder is condensed and collected in a crude oily condensate. This is first heated (500 degrees C.) in a retort to distill and recover the oil, etc., and then heated to a higher temperature (1000 degrees C.) in another retort to distill and separate pure magnesium metal from a residue consisting of impurities and unreacted ore and carbon, which may be treated by a second operation to recover more metal. The powder contains from 60 to 70 percent of its weight in metallic magnesium. A recovery of 80 to 90 percent of the magnesium content of the magnesite ore in the form of metal in the condensate is possible in practice. The recovery of the magnesium content going to the distillation furnace is about 98 percent, thus the overall recovery of better than 80 percent of the magnesium metal content of the calcined magnesite is possible. This electrothermic magnesium metal is superior to the electrolytic grade from salt brines; it produces 99.97 percent purity in the first distillation furnace.

By this simple direct process the total power consumption is about 10 k.w.h. per pound of magnesium metal recovered which is less than used in aluminum production. The cost of this much lighter metal is considerably below that of the selling price of aluminum, and in my opinion the cost of production from magnesite would be about 10 cents per pound on a basis of 50 to 70 tons of metal per 24 hours. Such high-purity electrothermic magnesium is more resistant to corrosion and produces superior alloys. Magnesium by this new direct electrothermic process is actually of better quality, less corrosive, and of higher strength than that produced by the present-day electrolytic process directly from the d.c. cell.

* By-product is carbon dioxide (one-half ton per ton of magnesite) used for making dry ice.



High-frequency oscillator, rear, in U. S. Bureau of Mines pilot plant, Pullman

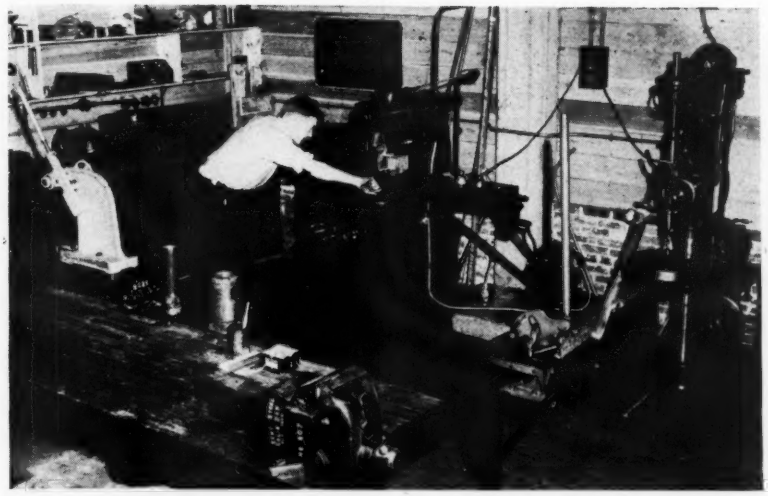


The first laboratory magnesium experimental plant (1936 to 1940) at Washington State College, showing the chloride process furnace and the direct arc carbon reduction process furnace for the reduction of magnesium from magnesite

Successful Tests on Small Scale Have Been Made

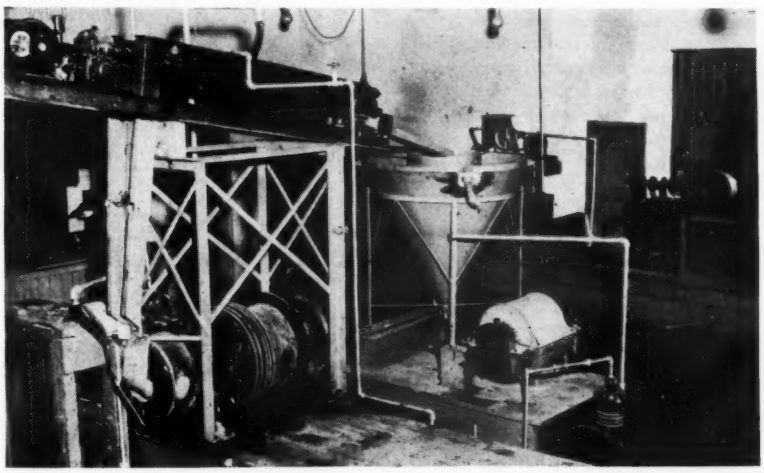
Such a huge difference between the cost of producing one pound of electrothermic magnesium and the value of the extracted metal from the magnesite ore is a challenge to metallurgists. The Pullman Unit of the Metallurgical Division of the U. S. Bureau of Mines in cooperation with State College has undertaken to meet this challenge, and the preliminary laboratory developments, during the first three years, have been satisfactorily completed.

Successful tests on a small scale were finally developed after more than two years of furnace developments and operating details. The process of direct carbon reduction and distillation as finally selected by H. A. Doerner, engineer-in-charge, U. S. Bureau of Mines, differs in many im-



Left: Portion of machine shop used in connection with U. S. Bureau of Mines pilot plant

Below: Ore dressing plant, School of Mines and Geology, Pullman



portant details from the plant design and descriptions of the German-Austrian Hansgirg process. In my opinion these are distinct improvements toward the simplification of this very important process. The scarcity of helpful information on the Austrian process required the Pullman staff to develop many interesting details of furnace equipment and procedure. The staff under Mr. H. A. Doerner's direction has been truly pioneering on electrothermic magnesium in this country. It has done remarkably good work.

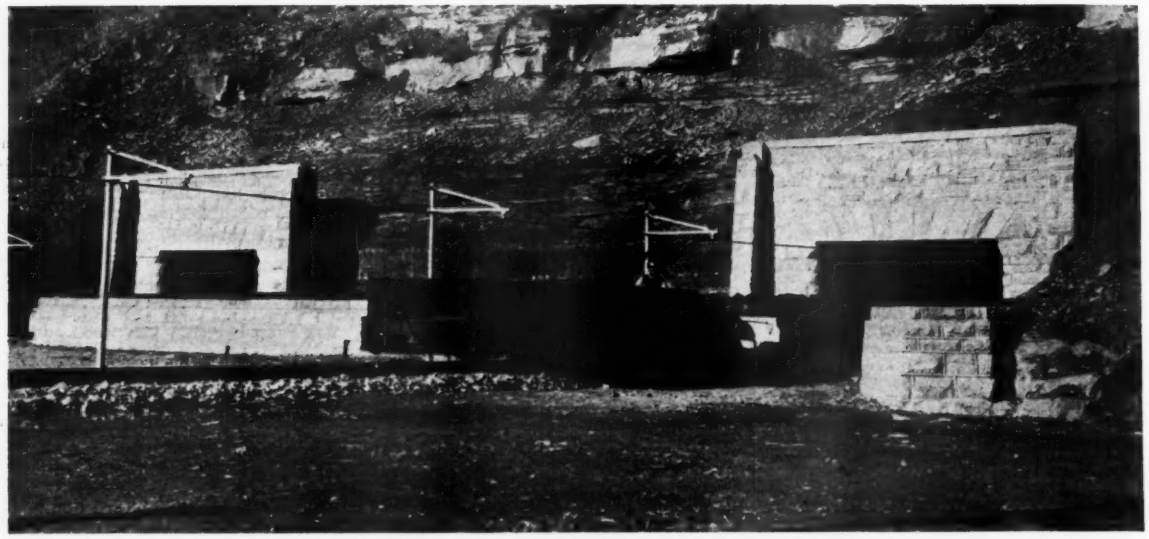
A new small government pilot-plant for continuously producing 100 pounds per 24 hours of high-purity electrothermic metal from magnesite, with many new automatic features is completed. There are now eight full-time members of the research staff on magnesium under Mr. Doerner's direction. This plant is producing very high-purity magnesium metal (99.97 percent), and the process seems assured for the magnesite ores of Washington. It is a very important development for the nation. It is expected that industrial procedures and approximate operating costs can be demonstrated in this unit.

Other Electrometallurgical Research Also Carried on

During the past eight years the State has been actively engaged in various electrometallurgical research problems, and has published many reports, bulletins and information circulars on this work. Definite progress is being made with magnesium, manganese, chromium and aluminum Pacific Northwest ores, and by the time the power of Grand Coulee is available to the region, it is reasonably certain that these investigations will make clear the possibilities of utilizing certain mineral deposits within the State and the Pacific Northwest for the establishment of permanent industries.

We hope that a path toward a more prosperous territory will be opened by carefully planned researches. The intelligent use of the information furnished by the Federal and State geological surveys as well as the results of the U. S. Bureau of Mines and the State Electrometallurgical Research Laboratory at Pullman should gradually bring about a large utilization of the power generated at the Grand Coulee Dam. Washington and the Pacific Northwest should become an important electrometallurgical and chemical manufacturing region during the next few years. In fact some industries are already under way at the present time.

New possible electrochemical and electrometallurgical industries for the region, utilizing low-priced primary electrical power from Bonneville and Grand Coulee Dams, the raw mineral resources of the region, and tidewater plant locations where necessary, are electrothermic magnesium, electrolytic aluminum, calcium carbide, ferro alloys, electrolytic mananese, chromium salts and electric furnace iron and steel from scrap iron. There is also a possibility for an electrothermic zinc industry. Out of these industries, aluminum, calcium carbide, ferro alloys, electrolytic manganese are now realities, while a magnesium plant in eastern Washington will soon be under way.



Mine portal at one of the Koppers operations

PRECAUTIONARY METHODS in SHUTTLE CAR OPERATION*

By E. J. WEIMER
Division Superintendent
The Koppers Coal Company

Efficient and safe shuttle car operation involves careful planning and close supervision to prevent accidents and injuries. This article highlights some of the measures that must be taken in this regard.

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SHUTTLE cars are one of the new types of equipment to be introduced into coal mines. From early experiments of almost five years ago the use of these cars has developed into a method of operation that has gained a definite place in mine modernization practice. Like all new machines, rubber tired service haulage has brought its special problems; we will consider some of these problems and their solution growing out of operating experience.

Dust Must be Controlled

Control of dust in mechanical mining is an outstanding problem of the bituminous coal industry today. This is true regardless of the method of mining, whether it be conveyors, mobile loaders loading directly into mine cars or mobile loaders loading into shuttle cars. An attempt must be made to control dust in all phases of the operation such as cutting, loading, and in the case of shuttle cars at the point of discharge into the mine cars.

Water or a chemical wetting agent, such as Aerosol or Sealtite or Compound M, may be used for spraying on the cutter bars of machines. Several methods of application have been devised, such as tanks and pumps mounted on the cutting machine. Where spray lines are available, the water may be sprayed on the cutter bar by attaching flexible hose to the cutter bar. In some instances the spray is applied on the side entering the kerf, on some as it leaves the kerf and a third point of application is at the head end of the cutter bar. In this latter case, the pipe or hose must be run up the inside of the cutter bar.

After the coal is shot down, it may be wetted down prior to loading. This is usually done with water from the sprinkler lines which are carried to all faces. However, as in the case of the cutting operation, a chemical wetting agent may be used in place of water. In some instances spraying may be done at the end of the loading machine boom as the coal is being discharged into the shuttle car but this is not customary if the loose coal has been well wetted before loading.

At the point of loading into the mine car, if an elevator is used, the coal may be sprayed again as it is being discharged from the shuttle car into the hopper of the elevator. If considered necessary, an additional spray may be introduced at the discharge end of the elevator as the coal is transferred to the mine car.

* Paper presented at the 32nd Annual Convention of the Mine Inspectors Institute of America at Bluefield, W. Va., June 2-3-4, 1941.

The constant travel of the shuttle cars back and forth from the faces to the loading point quickly pulverizes any loose coal on the haulage ways. Keeping the haulways clear of loose coal will remedy this situation but will not entirely eliminate it. Haulways must be well sprinkled to allay this fine dust. Flake calcium chloride may also be used, spread over the traveling ways in its dry form. It absorbs moisture from the air and tends to pack the dust into a firm, hard surface which makes a good roadway.

Even with all these precautions, a certain amount of dust will accumulate and this must be neutralized by the heavy application of rock dust.

Adequate Ventilation Also an Important Factor

Very careful consideration must be given to ventilation in any mechanical set-up. Additional safeguards must be taken to insure against the increased dust hazards. The elevator or loading point must be kept on fresh air because of the equipment which must operate at this point, namely the elevator, car spotting hoist and locomotive which changes empty and loaded trips.

With shuttle car operation, a battery charging station, suitably equipped and conveniently located, is necessary. This charging station should be on a separate fresh air split. This eliminates any possibility of return air passing over the electrical equipment and in case of electrical trouble prevents any smoke or fumes being carried to the working faces.

Due to the rapidity of advance, the maintaining of sufficient stoppings and checks presents a real problem. While the stoppings should be constructed of fire-proof material, they need not be as substantial as a long life permanent stopping. One method of constructing these semi-permanent stoppings is to lay up concrete blocks dry and then cover with a thin coat of plaster. These lay up rapidly and the blocks may be recovered easily when it is necessary to remove them, making the stoppings comparatively inexpensive.

Ventilation limitations are rather severe due to the fact that a great number of roadways must be kept open to maintain a flexible haulage system. This necessitates the use of a great number of canvas checks so that the shuttle cars can pass through them readily. These checks receive rough treatment from the continual passage of shuttle cars and must be of heavy material and well built. This, in turn, introduces a collision hazard, much more pronounced than in the case of track equipment. With track everyone knows where to look out for other pieces of equipment but with the trackless equipment no one can know exactly where it may be traveling at any special time.

Due to dust conditions and the rapidity with which fresh coal faces are exposed, which in turn may liberate larger quantities of gas, a good ventilating current must be maintained right up to the faces. This can be accomplished by using line brattices inby the last open crosscuts.

Hazards Peculiar to Shuttle Car Operation

Shuttle car operation necessitates the use of a great deal of caterpillar mounted equipment such as loading machines, cutting machines, mounted drills, etc. The caterpillar trucks, in themselves, constitute a hazard to feet and legs especially. Unlike track mounted equipment they have no predetermined course of travel but operate in any position with respect to ribs, etc. Therefore the operators must be extremely watchful so that they may have proper clearances to work in.

Shuttle car operation necessitates also the use of much rubber tired equipment. Besides the shuttle cars themselves, there are rubber tired rock dusters and rubber tired mounted drills. All this portable, rapidly moving equipment creates mainly the hazard of collision with other equipment, ribs, posts or men. The shuttle cars are powered by two storage batteries. These are very large and heavy and extreme care must be exercised by workmen in changing and handling these heavy batteries to avoid accidents.

The shuttle cars in themselves, introduce a rather singular hazard. Inasmuch as they are relatively new, they are more or less a novelty and men, other than the regular operators, are tempted to run them from time to time. This may result in an accident due to collision since the cars are not as simple to operate as they appear to be at first sight. A definite period of training must be undertaken by all operators before they can become safe and efficient.

There is also a great amount of miscellaneous portable auxiliary equipment incidental to shuttle car operation, such as powder car, car changing hoist, oil and grease car, mechanics' tool and supply car, and elevators for loading coal into mine cars.

It can readily be seen that the whole subject of hazards peculiar to shuttle car operation may be summed up by the following: from start to finish, it is a system of the rapid movement of a mass of equipment and men from place to place. Therefore, extreme caution and careful planning must be observed in order to avoid confusion, which would inevitably cause accidents. The various phases of operation must be carried on in an organized, routine manner.

Timbering Must be Plentiful and Well Placed

As compared to a track layout, a shuttle car layout places many limitations on timbering details. Intersections, for example, must be timbered leaving clearance in all directions for the passage of the shuttle cars. Since these cars are 6 ft. 6 in. in overall width, and 21 ft. overall length, with a wheel base of 8 ft. 2 in., one can readily see that considerable clearance must be maintained for their safe and efficient operation. This usually is accomplished at intersections by bridging with posts set only at the coal rib corners and as close to the rib as possible. This leaves the entire intersection free of posts or other obstructions.

All posts must be set close to the ribs except at the immediate working face, where safety posts are set as the cut of coal is loaded out. Immediately back from the face, temporary or permanent bars, as the need may be, are placed. If temporary, these are steel H-beams, set on jacks so that they can be moved easily as the faces advance. If the bars are permanent, they are timber headers and are set on posts. On pillar work, no steel bars are used; heavy cross-headers set on posts are being used in all cases.

At the car loading point or elevating conveyor, top generally must be shot for headroom. At this point then, heavy steel bars are used for roof support since the roof is apt to be tender after shooting.

Electrical Equipment Requires Careful Attention

To furnish power for all the necessary operating equipment on the sections, 4/0 insulated wire is carried close to the working faces (in last open breakthrough). At intervals along these lines permissible junction boxes are located so that the various cables may be plugged in. These junction boxes must be kept in good working order and in sufficient number so that there will be no conflicts or delays in the operation of the many pieces of equipment that derive power

from them. No bare copper should be used anywhere except the trolley wire up to the elevating conveyor, which must be located on a fresh air current. Beyond this point there is no need for any bare copper since the locomotives do not need to pass inby of the loading point.

Since cables play a major role in the operation of all the equipment except the shuttle cars themselves a special effort must be made to keep them intact. All cables should be suspended over traveling ways so that no heavy equipment will be forced to run back and forth over them. While rubber tired equipment will not cut a heavy cable in two, constant abuse of this kind will eventually roll and weaken the insulation to such a point that it will fail and the cable will blow up. The best insurance against cable failures is to make a practice of placing the cables where they cannot be run over by any unit even though it is rubber tired.

In conclusion, I would like to point out that I have not attempted to go into detail on any items, but have attempted to touch only on the more important precautionary measures applicable to shuttle car operation. We must bear in mind that a shuttle car unit is a flexible, fast moving one, in all its phases; all the potential hazards of movement to equipment and men and must be handled as such to attain safe and efficient operation.

Shuttle car discharging into mine car

Coal Producers Must Ship from Designated Points

Director Gray of the Bituminous Coal Division of the Department of the Interior on August 12 issued a statement saying that regulations prohibit code member producers from shipping coal by rail from any loading point or railroad other than those listed for their particular mines in the official records of the Division.

Producers now making rail shipments from loading points so listed and who desire to ship from additional loading points should file appropriate petitions with the Division requesting such changes.

The statement said that there is some confusion in the industry concerning the significance of freight origin groups and shipping points for rail coals. In formulating minimum prices, the Division grouped mines into freight origin groups upon the basis of their loading points and railroads as shown in official Division records. This was done as a means of simplifying the preparation, use and contents of the price schedules, particularly so that the minimum prices would appropriately reflect the relative market values of the different coals at points of delivery in the light of the prevailing freight rate structure. The use of shipping points other than those listed in the Division's records is inimical to the proper functioning of the price schedules.

Distribution statistics indicate that shipments to Great Lakes docks are approximately 21 percent lower than they were at the same time last year, despite the heavy increase in production. Great Lakes coal cargo loadings this year totaled 19,198,211 as of July 26, whereas they were 24,497,200 same time last year. Coal Division economists believe that Lake dock shipments this year should materially exceed those for last year, when 48,000,000 tons were stored prior to the close of navigation in November.

Shipment of New England cargo coal, via "Tidewater" vessels from Hampton Roads, are approximately the same as last year at the same time, despite the estimated increased requirements. They totaled 7,185,777 tons for the year 1941 as of July 26, as compared with 7,167,744 for the corresponding time in 1940. Rail shipments supply a smaller portion of New England's needs. Although they have increased materially this year, they totaled only 3,289,250 tons for the year as of July 19. As of the same period last year they totaled 2,836,950 tons.

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MINING ON PUBLIC LANDS*

The cabin of James F. Callahan, the prospector who discovered and developed the Callahan Zinc Lead Co. property, a large producer of zinc during the first World War

By DONALD A. CALLAHAN
President
Lexington Mining Co.

Exploration for and development of mines is one of the most hazardous occupations for capital. This was taken into consideration in drafting the country's mining laws, and the encouragement thus given to private initiative and enterprise has made this country the world's foremost mineral producer. It is now proposed that the Government should lease public lands under conditions materially restricting the scope of private initiative and return. Mr. Callahan states clearly the case for the mining industry, to continue the system which has been so successful and productive.

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A RESOLUTION of the United States Senate authorizes a study of the existing laws which relate to the development of the mineral resources, including oil and gas, of the public lands of the United States with a view toward providing more effective development and utilization of such resources for the purposes of national defense; fostering free competitive enterprise and the investment of private capital in the development of the mineral industry and the production of essential and useful minerals; and conserving mineral resources to the fullest extent which is consistent with their proper and constant utilization. I feel it important that we understand clearly the situation with regard to the appropriation and subsequent development of the mineral resources in our western public land states. I have read the statement made by Mr. Harold L. Ickes, Secretary of the Interior, on July 3, 1941, and I desire to address myself particularly to certain recommendations which the Secretary has made in this statement.

* Statement presented before the Subcommittee on Public Lands, U. S. Senate, studying the development of the mineral resources on public lands.

Early Mining Laws Reviewed

First, however, permit me to review the events leading up to the enactment of the present laws relating to the location and appropriation of mineral claims. It is necessary to a complete understanding of the present situation to review the history of the location and development of mining properties on the public lands and this history may be divided into four distinct periods. First, from the foundation of the government to the discovery of gold in California. Second, from the discovery of gold in California until the passage of the Lode Law in 1866.

Third, from the passage of the Lode Law in 1866 to the enactment of the general law on May 10, 1872. Fourth, from the enactment of the general law of May 10, 1872, until the present time.

During the first period or until the discovery of gold in California, there was very little federal legislation touching the title to mining properties. The new government, following the policy which had been in existence in the mother country and in foreign nations, adopted a policy of reserving mineral deposits and attempted to carry on a system of leasing mineral lands, the earliest supervision being performed by the War Department. This system was not satisfactory. The government reserved 6 percent of all the ores raised to itself but it was found that, while for a few years the rents were paid with tolerable regularity, in 1834 in consequence of a great number of legal entries of mineral lands the smelters and miners refused to make any further payments and the government was entirely unable to collect them. In 1847 it was concluded to sell the mineral lands and do away with all reserves of lead or any other metal since they had only become a source of embarrassment to the War Department which was the enforcement agency.

President Polk Recognized the Faultiness of the Leasing System

In this connection it is interesting to quote from a message of President Polk in December, 1845. He said "The present system of managing the mineral lands of the United States is believed to be radically defective. More than a million acres of the public lands supposed to contain lead and other minerals have been reserved from sale and numerous leases upon them have been granted to individuals upon a stipulated rent. The system of granting leases has proved to be not only unsatisfactory to the government but also to the citizens who have gone upon the lands and must, if continued, lay the foundation for much future difficulty between the government and the lessees."

From this time until the discovery of gold in California, several Acts of Congress were passed providing for sale of mineral lands in Missouri and other middle western states. Under these various laws, the copper, lead and iron lands of that section were sold, the price ranging from $2.50 to $5 an acre.

Discovery of Gold in California Resulted in Workable Mining Code

The discovery of gold in California brought about an entirely new situation. Under the Treaty with Mexico the title to all the mineral land was vested in the federal government. Until the admission of the state into the union in 1850 California was governed by the military authorities. In the meantime the discovery of gold and the reports of its extensive distribution had brought to the shores of the Pacific a tide of immigration from all parts of the world and the mineral regions of the golden state became a beehive of gold seekers with their attendant camp followers. The military authorities for a time thought to bring order out of chaos but finally Colonel Mason who, in connection with Lieutenant W. T. Sherman, visited the scenes of the earliest mining operations, decided, after considering the large extent of the territory, the character of the people engaged and the small scattering of forces at his command, that he would not interfere but would permit all to work freely. In this situation a system of home rule was adopted which in the course of time extended throughout the mining regions of the west as new discoveries were made and these rules subsequently came to be recognized as having the force of established law.

These primitive codes which were adopted by the miners were quite comprehensive in their scope and undertook to legislate generally on the subject of civil rights as well as providing rules for the possession and enjoyment of mining claims. They provided for the election of an Alcalde or judge who propounded the law in the court from whose judgment there was no appeal. Generally speaking, these rules and customs recognized in the code conformed to the Mexican ordinances, the continental mining codes and especially the Spanish and the regulations among the bounders of Devon and Cornwall in England and the high-peak regulations for the lead mines in the county of Derby. The regulations were founded in nature and based upon equitable principles, comprehensive and simple.

With respect to lode or quartz claims, the miners' rules and customs established a right of property at total variance with the then existing Mexican law. This was the right to work the vein appearing on the surface of a

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claim to an indefinite depth regardless of the occupation or possession of the surface underneath which it might penetrate and to hold in connection with the main veins all its dips, angles and variations. The lode was the principal thing and the surface a mere incident. It was this rule which formed the foundation for the present existing law governing what are known as "extra-lateral rights."

These rules, although differing in many respects among the several districts, all recognized discovery followed by appropriation as the foundation of the possessor's title and development by working as the condition of its retention. They were so framed as to secure all comers within practicable limit absolute security of rights and privileges in working the mine. The first appropriator was everywhere held to have within certain well-defined limits a better right than others to the claims taken up and in all controversies, except as against the government, he was regarded as the original owner from whom title was to be traced.

These Early Codes Were Recognized in Drafting Legislation

These local systems are said to have constituted the American common law of mining and their binding force has been recognized from the beginning by the legislation of the states and by a uniform line of decisions in the state and territorial courts. The federal judiciary followed the rules thus adopted. Congress has always recognized their binding force.

This discovery of gold in California and the constant rush of people from all over the world to reap a golden harvest made it necessary for the federal government to take full notice of the situation thus created. President Fillmore in his annual message to Congress referred to the subject and speaking of the mineral lands of California said "Various methods of disposition of them have been suggested. I was first inclined to favor the system of leasing as it seemed to promise the largest revenue to the government and to afford the best security against monopolies; but further reflection and our experience in leasing the lead mines and selling lands upon credit have brought my mind to the conclusion that there would be great difficulty in collecting the rents and that the relation of debtor and creditor between the citizens and the government would be attended with many mischievous consequences. I therefore recommend that instead of retaining the mineral lands under the permanent control of the government they be divided into small parcels and sold under such restrictions as to quantity and time as will insure the best price and guard most effectively against combinations of capitalists to obtain monopolies."

First Comprehensive Act Passed in 1866

It was not until 1866, however, that the federal government passed a comprehensive act with relation to the sale of mineral lands. That act was known as the Lead Law of 1866 and was defective in many respects, but those who were responsible for its passage are entitled to the gratitude of those engaged in the mining industry for the establishment of at least three important and basic principles.

First, that all the mineral lands of the public domain should be free and open to exploration and occupation. Second, that rights which have been acquired in these lands under a system of local laws with the apparent acquiescence and sanction of the government should be recognized and confirmed. Third, that titles to at least certain claims of mineral deposits or lands containing them might be ultimately obtainable.

Thus the government for the first time in its history inaugurated a definite regulation policy with reference to its mineral lands. It abandoned the idea of exacting royalties on the products of the mines and gave free license to all its citizens and those who had declared their intention to become such to search for the precious and economic minerals on the public domain and when found gave the assurance of at least some measure of security in possession and right of enjoyment. The conditions imposed were no more onerous than those which the miners had imposed upon themselves by their local system. This declaration of governmental policy stimulated and encouraged the development of the mining industry in the west and we have the record of initiative on the part of prospector and capitalist to testify to the wisdom of the legislation.

This act remained in force until 1872 at which time the Congress passed "an act to permit the development of the resources of the United States" which reaffirmed the policy of the government as to the exploration, development and purchase of its mineral lands by its citizens or those who had declared their intention to become such. To all intents and purposes this act constitutes the present system of location and appropriation of mineral lands throughout the United States.

These Laws Resulted in Unparalleled Development

Under these laws we have witnessed an example of private initiative which is perhaps unequalled in the annals of mankind. The mountains of the western country have been made to give up their treasures and those treasures have been placed at the disposal of mankind to make possible the great advance in industrial development and efficiency which we know as "the machine age." The incentive was, of course, the lure of profits to those fortunate enough to discover bonanza veins. We do not believe that the development of the forbidding country lying west of the Rocky Mountains would have been possible under any other system. Mining on the North American Continent has always represented the highest type of American enterprise and enterprise is the vital principle underlying the accomplishment and the character of the American people The prospector has tramped the hills and carried his blankets and lain down under the stars at night alone. He has searched the surface of the earth for indications of treasure beneath. He has studied the rocks and followed his own judgment in locating his claims. Upon those claims he has expended his own energies, has used his own intelligence, and has reaped for himself personally either reward, sometimes in large measure, or has become a human sacrifice to the inexorable progress of the human race.

After the prospector, the operator, the engineer, and the metallurgist have brought their gifts to this great enterprise and the history of mining, and particularly its development during the past 50 years, bears testimony to the richness of those gifts. While mining is to a large extent a collective enterprise in the sense that it is practically all carried on under the corporate form, there is no more individualistic business in all the world, for individual human personalities have stamped themselves upon it from the prospector to the geologist, metallurgist, and operator. It has expressed itself in a program of life and labor which has released the creative powers of the individual human spirit for the benefit of all. It has and still requires a firm grasp of basic facts. It rests upon the principle that unremitting toil and the application of intelligence are neces-

sary to human accomplishment and the advancement of civilization.

Government Policy Has Been Liberal

No factor has contributed to this more than the attitude of the government in its policy of opening the mineral lands to private location and application. Its laws have been framed to provide, first, the appropriation by the individual, partnership, or corporation, and secondly, the requirement that that mineral land once appropriated must be developed over a period of years before title can be derived from the government.

Now, however, Secretary Ickes suggests that the objects stated in the pending resolution would be furthered substantially by expanding the mineral leasing principle to include all minerals, both metallic and non-metallic. He says "The old mining laws aided materially in the settlement and development of the west but they no longer are effective for that purpose. There are certain defects inherent in them which should be corrected. These laws were enacted at a time when the individual prospector, so frequently portrayed walking up a gulch carrying a pick and leading his faithful burro, was the principal factor in the production of at least the precious and semi-precious metals. As a matter of fact, the individual prospector no longer exists as a significant factor in the mining industry."

I live in the Coeur d'Alene mining district which is the greatest lead producing area in the world. I come of a prospecting family. Two of my brothers went into that district when it was a wilderness and spent their entire lives there. They typified the spirit which built the west and as a crowning achievement to their lives and labors they brought into production at the very outbreak of the first World War the richest body of zinc ore ever found in the United States. I have a wholesome respect for the prospector and his philosophy and I know that he would view with horror the management of the virgin claims upon which he is ready to stake his very existence by the bureaucratic system which would be entailed under a law providing for a leasing system.

The prospector of today may not lead a burro or sleep under blankets. He may have acquired the major part of his knowledge of minerals in the classroom of one of our American colleges. His work may not be confined to seeking outcroppings on the surface or following leads which his practiced eye has told him may lead to bodies of ore. His work today is largely underground. He must sample quantities of rock and study formations at depth. He may spend all his time over the test tubes in a laboratory but he is still a prospector if he is truly a mining man. He must possess faith; he must possess patience; he must possess courage and I submit to you that those are qualities which do not inhere in governmental bureaus and their personnel.

Leasing System Would Remove Incentives to Exploration

Ahead of the prospector of the old type was the shining reward of discovery of a bonanza lode. Ahead of the prospector of the modern type is the incentive of finding new ore bodies which the old prospector has overlooked through the application of new scientific methods of ore seeking and of discovering new processes which will make possible the utilization of low grade ore bodies. There is no possibility that the leasing systems suggested by the Secretary could possibly improve upon the methods now used and it is certain that such a system would remove the incentive which motivates those who enter into the mining business inspired by the hope of substantial reward.

The Secretary is also concerned about the monopoly which is inherent in the present system of location and appropriation of mineral lands. It seems strange to me that while we all are opposed to the idea of private monopoly, and properly so, we do not revolt at the thought of government monopoly and control. I have believed that one of the great indictments of the totalitarian states is that they have assumed government monopoly and complete control over the lives and fortunes of their subjects. I do not appreciate the theory of risking lives and fortunes to prevent the invasion of that idea from abroad if we are ready to surrender to the same principles within our own government.

For that is what it means. A leasing system means continued control by the federal government. It means endless reports, constant investigation, endless rules and regulations, changing policies of governmental officers, decisions of the rights of claimants by the very governmental body which has made the rules for the carrying on of the mining enterprise. We of the west are not so naive as to believe that this will not result in locking up the treasures of our western mining areas. We have justification for that opinion. The recent policy of setting aside vast areas of the west in national parks and monuments for single use purposes, thereby completely locking up undeveloped mining resources, is a case in point.

Then again we know that another governmental bureau having to do with the regulation of the sale of mining securities has crippled the development of our mining areas to such an extent that the day of the small operating company has passed. Talk about monopoly. In the very district in which I live there is no longer opportunity for a small group to finance a mining operation through the sale of securities to the public, the time-honored method by which properties which have since become highly productive were first developed. Today the discoverer of a promising property must go to the large mining companies for funds with which to develop and put into production what they have discovered. Some of them have spent considerable time trying to obtain government loans but fortunately that activity of our government has been administered with a realization that this is a business which government must be very careful about.

Taxes Also Greatly Affecting Mining

Then again we of the mining industry have to deal with another department of the government—the tax collecting department. The Secretary refers to the development of strategic metals and rather chides the industry for not being prepared for this emergency by having ready to hand vast stores of these metals for which there was little or no market in times past. Now the government wants these metals. It has spent considerable sums in searching for them and in the tax law of 1940 it gave a special exemption from the provisions of the excess profits tax section of the income from certain of those strategic metals. That was a very splendid gesture and several firms willing to cooperate expended considerable sums of money in the development of such ore bodies and in the erection of plants to beneficiate them. Less than a year has passed and now we find pending in the Congress a new tax bill which eliminates this exemption. If this should become law we shall have a new evidence of the faith one may have in the policies of the government.

The Secretary of the Interior suggested several changes in existing mining laws which in his opinion would further the development of our mining areas and would contribute largely to

our defense program. I do not have any faith in the promise of the government spending money in exploring and developing our mineral resources. The history of the struggle which the very efficient Bureau of Mines in the Interior Department has been obliged to go through year after year in order to secure the necessary funds for its skeleton organization indicates to my satisfaction that once an emergency has passed we hear very little about the government trying to develop mineral resources. Perhaps that is just as well. It is a risky business. Thousands and thousands have failed at it. Human lives have been given up in their entirety to fruitless searches for the earth's treasures. I suggest that we keep the government out of such business and let the tireless energy of man urged on by the desire for personal gain encounter and overcome the obstacles which nature has imposed before its treasures may be brought to light.

I do feel, however, that there are many ways in which the government can assist in the development of mines. It can give a little more sympathetic treatment to the financing of mining enterprises through the Securities and Exchange Commission. It can recognize the unique character of mining enterprises while it is writing its tax laws and give encouragement in the shape of exemptions or special treatment to those mining enterprises which cannot possibly carry on under the crushing load of our present-day system of taxation. It can refrain from threatening trade agreements with countries which have cheap labor and high grade ore deposits. It can avoid the situation such as has developed with regard to zinc by maintaining the protective duties that made it possible to develop our zinc mines and smelters. It can in the future, as it did so well in the past, encourage through beneficent laws the efforts of those who are willing to take all the chances in this very hazardous business.

I know that in some circles there is a feeling that the rewards of mining have been unequally distributed. That is true, but nature led the way by making an unequal distribution of its treasures throughout the nation and throughout the world. I submit that no mining enterprise which has come to success in this land but has contributed materially to the building of the nation's welfare. If some who are fortunate have reaped high reward so also a great army of workmen have received wages higher than the average industrial wage throughout the nation. Machinery and supplies used and consumed have afforded more employment and the utilization of other basic materials. Local, state and federal governments have taken their share in the form of taxes and now are taking an increased share of the return from these enterprises. And there is one thing which we must remember with regard to the profits of mining. Nobody has lost. Everybody has gained. New wealth has been added. Increased comforts have been procured for the human race.

So I submit to you that the laws relating to the location, appropriation and operation of mining claims have worked. They should not be disturbed. The system should not be distorted.

View of Wallace, in the Coeur d'Alene mining field, Idaho

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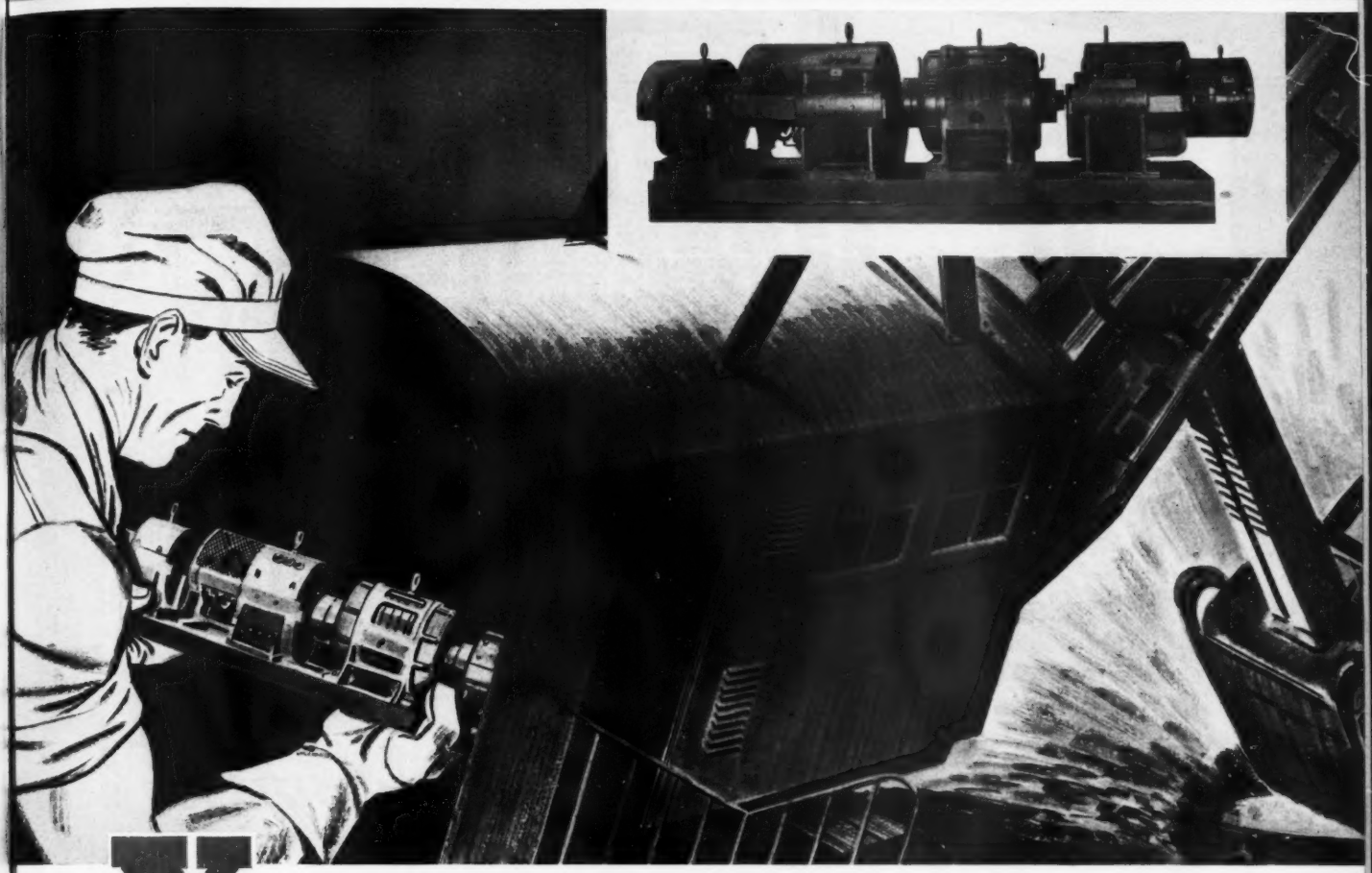

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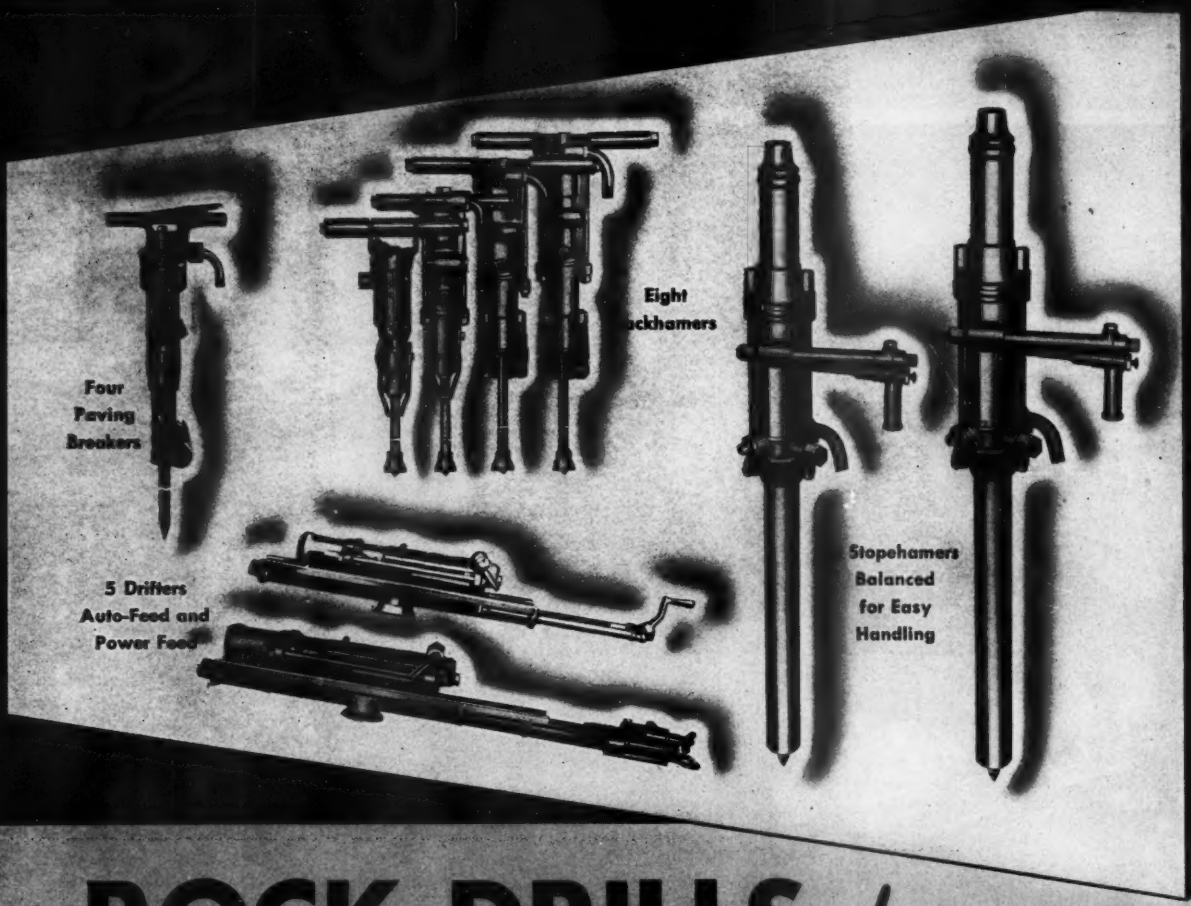

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With the COAL DIVISION

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A SURVEY OF POWER COSTS IN COAL MINING

● ***A summary and a brief statistical analysis of mine power surveys made during the past five years in the Southern Appalachian field.***

By G. B. SOUTHWARD
Mechanization Engineer

FOR the past several years our Coal Division has been furnished, through the courtesy of the West Virginia Engineering Company, copies of an annual power survey made in the southern Appalachian field. This has given individual records for the mines of about 160 coal companies operating in south-central West Virginia, Virginia and eastern Kentucky, and the figures are representative in showing, for that district, the amount and cost of power used in coal mining. These sheets have been distributed to our Coal Division members, and additional copies may be had upon request to the American Mining Congress.

In presenting the 1940 survey, Mr. H. P. Musser of the West Virginia Engineering Company, has submitted the following summary of power trends as indicated by the 1940 figures in comparison with those of preceding years, and his analysis is based on individual company records combined with the averages of various groups.

Summary of Trends Indicated by the 1940 Survey

"This year's power cost analysis has mixed trends. More tonnage was produced in 1940 and a larger proportion of it by means of mechanized mining. Practically the same amount of electrical energy was consumed as in preceding years with a result that fewer kilowatt-hours were used per ton for the entire group included in the analysis, yet medium- and small-sized mines used more kilowatt-hours per ton. Due to mechanization, the economies in power application are confined to large mines and groups of mines and particularly to that group producing about 1,000 tons per working day, which class has consistently shown itself to be efficient in the utilization of power.

"In the mining groups that are being most highly mechanized the increase in power consumption has been about .3 kilowatt-hour per ton. However, all these mines are not mechanized and some not fully mechanized; hence the increase in power use caused by mechanization should be greater for any one mine.

"Power cost per ton has followed exactly power use per ton. Cost per kilowatt-hour has remained the same, but is influenced adversely by one recent trend. It is important now to keep power continuously in the mine for mechanized mining with no interruptions caused by circuit breaker openings. Breaker settings and demand limiter settings have, therefore, been placed at higher values, thus permitting a greater percentage of demand cost to creep into the total cost of each kilowatt-hour of energy cost. Total kilowatt-hour cost varies inversely as the load factor in each group, thus emphasizing the advantage of using electricity on modern load factor rates in a manner to avoid high peak demands. The more efficient mines are reducing substation capacity as an economy move to improve load factor and, in turn, the cost of each kilowatt-hour.

"Mine power houses are becoming fewer in number and the total cost of operation is greater than for 1939, but

Table I

ANALYSIS OF POWER COSTS OF COAL MINES—AVERAGES FOR FIVE YEARS, 1936 TO 1940

Compiled from Annual Statistical Surveys of the West Virginia Engineering Company Covering Mines in the Southern Appalachian Field

(1) Year	(2) Number of Coal Companies	(3) Average Monthly Tonnage	(4) Substation Capacity K.W.	(5) Average Monthly K.W.H. Purchased	(6) Average Monthly Power Charge	(7) Average Total Cost Per K.W.H.	(8) K.W.H. Per Ton Coal	(9) Power Cost Per Ton Coal	(10) Tons Coal Per Total A.C. H.P. Connected
Monthly Tonnage Class—5,000 to 10,000 Tons									
1936	33	7,799	183.33	42,297	$872.88	$.0206	5.423	$.1119	19.42
1937	28	7,544	186.92	40,575	814.18	.0201	5.379	.1079	19.16
1938	35	7,459	190.88	43,003	858.33	.0200	5.765	.1151	17.41
1939	39	7,587	210.92	44,896	828.96	.0185	5.920	.1093	17.17
1940	30	8,391	219.48	53,166	940.37	.0177	6.340	.1121	17.63
Monthly Tonnage Class—10,000 to 20,000 Tons									
1936	40	14,314	298.75	74,674	1,350.57	.0181	5.217	.0944	25.44
1937	45	14,474	310.72	78,446	1,364.75	.0174	5.420	.0943	22.82
1938	49	14,695	393.87	92,659	1,579.85	.0171	6.305	.1075	18.67
1939	48	13,760	347.92	80,880	1,358.02	.0168	5.880	.0987	20.55
1940	41	14,433	325.00	79,136	1,352.66	.0171	5.480	.0937	22.30
Monthly Tonnage Class—20,000 to 30,000 Tons									
1936	34	24,706	443.38	128,514	2,094.45	.0163	5.202	.0848	24.30
1937	27	24,954	463.89	135,164	2,096.32	.0155	5.417	.0840	26.11
1938	30	23,870	527.73	139,917	2,208.29	.0158	5.861	.0925	20.41
1939	28	24,565	479.64	134,134	1,963.51	.0146	5.460	.0799	23.03
1940	33	24,946	475.16	140,145	2,044.37	.0146	5.618	.0819	24.02
Monthly Tonnage Class—30,000 to 60,000 Tons									
1936	26	39,339	607.69	168,634	2,789.04	.0154	4.617	.0709	30.61
1937	32	39,607	660.94	196,477	2,861.18	.0146	4.961	.0722	28.09
1938	17	36,857	715.62	200,695	2,914.09	.0145	5.445	.0791	22.46
1939	26	40,231	769.20	210,402	2,973.92	.0141	5.230	.0739	22.93
1940	26	42,340	731.81	234,603	3,218.38	.0137	5.540	.0760	25.67
Monthly Tonnage Class—Over 60,000 Tons									
1936	5	75,801	1,120.00	306,966	4,410.54	.0144	4.050	.0582	38.11
1937	5	90,546	1,277.00	489,048	5,854.44	.0120	5.401	.0647	36.54
1938	5	88,282	1,382.00	594.076	6,827.59	.0115	6.729	.0773	32.77
1939	5	86,825	1,070.00	541,730	5,966.68	.0110	6.240	.0687	39.24
1940	12	90,090	1,416.67	512,358	5,977.47	.0117	5.690	.0663	29.98

less than for 1938, and the tonnage output of this group varies in the same manner. The cost per ton, however, is lower this year due to a greater tonnage output.

"Large groups of mines have more rate schedules available to choose from than smaller mines and this fact sometimes enables them to reduce power costs slightly. The effect of a lower power schedule recently applicable to many of these mining companies should be noted in the data for 1941."

Compilation of Five Years' Averages

In order to show a comprehensive cross section of underground power developments in these fields, we are presenting in Table 1 a compilation of average figures for the past five-year period, prepared from the annual surveys. The mines are classified into various tonnage production groups, and all figures in this compilation are the average figures for the number of mines, or companies, as given in column 2. This tabulation therefore, merely illustrates the general power trends, but it is really indicative of the changes that have taken place, because the survey covers the same companies and the same mines over the five-year period. It will, of course, be realized that individual mines within each group have results that are at considerable variance from the average and it will also be noticed that Mr. Musser's analysis mentions some recent trends, developed during the last year, that are not brought out in the five-year comparison. His conclusions are naturally more authoritative as they take into account the results of typical individual operations which the averages do not disclose.

The year 1936 marked the beginning of a fairly widespread application of modern methods in this field; including the installation of mechanical loaders and conveyors as well as the addition of new equipment for the other phases of mining, such as heavy rail track, large steel mine cars, combination track-mounted cutting and shearing machines. All of these innovations required additional power and additional facilities for power distribution, but the exact degree to which this modernization movement has affected the mines covered in this survey is not known. However, a general idea of its influence may be estimated from the figures of mechanically loaded coal for the state of West Virginia. In 1936 there were 8,700,000 tons of coal mined in that state with mechanical loaders and conveyors, which production has steadily increased during this five-year period, reaching a production of 45,100,000 tons in the year 1940. The effect of this mechanization and modernization is indicated in certain of the items of Table 1, and some of the more noticeable results are tabulated in Table 2 which gives, in percentages, the amount of increase or decrease in 1940 as compared to 1936.

Conclusions from Five Years' Averages

In presenting a discussion of trends which seem indicated by the figures in these tables, two points should be emphasized. First, it always happens that departures from accustomed practices are started by a relatively small number of operations; these point the way which the others eventually will follow, but some years may elapse before the new methods have a marked effect on the general averages for a group. This should be kept in mind when considering the figures in Table 1. Second, the accuracy of a conclusion made from a comparison between two specific years depends altogether on whether the years selected are typical of their periods. In Table 2 the year 1936 was selected, for comparison with 1940, on the assumption that it was representative of previous power practices.

The greater amount of power used in this field is shown in Column 5 of Table 1, by the average monthly KWH purchased, and the mines in all classifications have made increases of varying degrees. In the low tonnage class, 5,000 to 10,000 tons monthly, this increase was from 42,297 KWH in 1936 to 53,166 in 1940, while the producers of more than 60,000 tons per month raised their power purchases from 306,966 KWH to 512,358 in that same period.

This larger power use can be partly explained as due to the greater coal production, but this is not the entire explanation. As given in Column 3 of Table 1, the tonnage, except for the higher tonnage groups, has not materially changed and, as shown by the first two lines of Table 2, in all classifications the amount of power purchased has increased by a higher percentage than the tonnage mined. The growth of mechanization has evidently been a contributing factor in bringing about a more extensive application of electricity, which seems proven by the KWH per ton of coal mined as given in Column 8 of Table 1. Here we find that in 1940 as compared to 1936, there have been varying but fairly substantial increases in this item for all of the tonnage classes from 5,000 to plus 60,000 tons per month, and the amount of these increases, expressed in percent, is given in the third line of Table 2.

An extremely interesting fact is that the power cost per ton of coal mined has not increased in proportion to the greater amount of KWH per ton. This is clearly indicated in Column 9 of Table 1, where it will be noticed that for the mines of the first three classes—5,000 to 30,000 tons per month—the power cost per ton of coal has remained practically constant. In the large producers of the last two groups—30,000 tons per month and greater—the per ton cost has risen somewhat but, as shown in Table 2 in a much lower percentage than the tonnage and the total KWH purchased.

The per ton power costs are a reflection of the cost per KWH (Column 7) which have had a general downward trend, and information is not on hand here to tell whether or not there have been reductions in the base rates for purchased electricity during the period covered. But, in any case, the full explanation would have to take into account a number of economies that have been made through improved load factors and through a more efficient use of power by the installation of large capacity feeders and returns. This is further indicated in Column 9 of Table 1, which shows that the larger mines, where better transmission facilities are more apt to be installed, have the smallest power costs per ton; in fact, this cost consistently decreases through all the groups as the tonnage production rises.

Table 2

PERCENTAGES OF INCREASE OR DECREASE IN 1940 AVERAGES AS COMPARED TO 1936

Item from Table 1	Column in Table 1	Monthly tonnage classifications: 5,000 to 10,000	10,000 to 20,000	20,000 to 30,000	30,000 to 60,000	Over 60,000
Coal production.....	(3)	+ 8%	Constant	Constant	+ 8%	+ 19%
Total KWH purchased	(5)	+ 25%	+ 6%	+ 9%	+ 39%	+ 67%
KWH per ton coal....	(8)	+ 17%	+ 5%	+ 8%	+ 20%	+ 40%
Cost per KWH.....	(7)	— 14%	— 6%	— 10%	— 11%	— 19%
Power cost per ton coal	(9)	Constant	Constant	Constant	+ 7%	+ 14%

Rotary converter station, in portable steel building

WHEELS of Government

● *As Viewed by A. W. Dickinson of the American Mining Congress*

Washington Highlights

OPACS ABSORBED: New super defense board coordinates functions of OPACS and OPM.

REVENUE BILL: Mining witnesses heard from many western states.

STRATEGIC MINERALS: Senate Finance Committee restores exemption from Excess Profits Tax.

PENALTY TAX: Senate eliminates proposed 10 percent tax on corporations using invested capital basis.

CAPITAL STOCK: Annual redeclaration of value granted in new Revenue Bill.

PRIORITIES: Preference Rating Order P-23 aids mining machinery and equipment manufacturers.

MAINTENANCE AND REPAIRS: Order carrying A-10 rating suspended, then restored.

PORK BARREL: St. Lawrence Project included in omnibus Rivers and Harbors bill.

PORTAL TO PORTAL: Alabama court holds miners' traveling time included in workweek.

COAL MINE INSPECTION: Board of operators and miners appointed, to advise Bureau of Mines.

ALTHOUGH the world must seem quite large to the German leaders just now with their army bogging down on the extended Russian front amid fall rains, and with the snows of winter just ahead, our globe appears to be shrinking in the series of hands-across-the-sea incidents which are marking the recent weeks. Handclasps at sea seem to be the order, with the American and British fleets cruising in a far-flung pageant of naval might, while President Roosevelt and Premier Churchill confer at ease on the gently swaying decks of war vessels. Encouraged by the results of these discussions Moscow asks for a tri-partite conference, and Premier Konoye of Japan proposes a meeting at sea with the President to discuss Japan's most difficult situation in the Asiatic and international picture. Just now a diplomatic mission of 47 Russians has arrived in two seaplanes from Moscow. Yes, the world must be looking bigger to the Germans, but it is most certainly getting smaller for the United States, as our activities and interests extend.

The recent commitments made by our Government for shipments of additional munitions to new allies have brought increased pressure here at home for "all out" production. At the turn of the month a new seven-man body, the Supply Priorities and Allocations Board, has been created with Vice President Wallace as chairman and Donald M. Nelson as executive director, to head-up, coordinate, and speed our defense activities. This is the latest approach to a "one-man" defense agency, which is expected to bear down heavily for needed production and to cut ruthlessly at non-essential activities.

While the House and Senate have been marking time in a series of three-day recesses during the past month the Senate Committee on Finance has been acting under urgent Administration instructions for quick handling of the Revenue Bill in order that the much-needed excise tax revenues may be forthcoming at the earliest possible date. Chairman George has accomplished this objective by holding quite closely to the form of the House Bill, at the same time stating frankly in the record that he realizes the many inequities which exist—particularly in the excess profits tax features.

Senate Speeds Revenue Bill

After the Senate Committee on Finance heard the testimony of the Treasury on August 8, Chairman George announced that the committee would have the Revenue Bill of 1941 on the floor of the Senate by September 2. Two short weeks of hearings were concluded on August 23 and after a week's work on the bill in executive session the committee met the announced schedule by reporting on September 2, and taking up the bill on September 3.

During the hearings Senator Pat McCarran of Nevada insisted upon the retention of the exemption from the excess profits tax for corporations producing tungsten, quicksilver, platinum, manganese, antimony, chromium, and tin. Senator Berkley L. Bunker of Nevada insisted upon the exemption for these strategic minerals and upon more intelligent and equitable treatment for all mining under the Excess Profits Tax features.

American Mining Congress Tax Committee Chairman Henry B. Fernald based his testimony on three main principles: (1) Income tax should apply only to true net income; (2) excess profits tax should apply

only to true excess profits and not to what are in fact normal profits; (3) no desire for revenue justifies imposing a crushing tax burden on some who may be caught by technicalities of the law. He further stressed elimination of the special 10 percent excess profits tax on corporations using the invested capital credit; retention of 8 percent rate for invested capital credit; determination of excess profits only after income tax has been deducted; averaging of any two of the years 1936-1939 for base period income credit; restoration of exemption for the strategic minerals stricken out by the House; annual declarations of capital stock value; restoration of consolidated returns; maintenance of existing depletion allowances; and several additional needed changes.

Further statements for the mining industry were made to the Committee by Donald A. Callahan of Wallace, Idaho, speaking for the Idaho Mining Association; Leo J. Hoban, treasurer, Sullivan Mining Company, Idaho; Charles F. Willis, Arizona Small Mine operators Association; Maurice Thorner representing California tungsten producers; J. Carson Adkerson, Manganese Producers Association; A. G. Mackenzie, representing Utah metal mines; and Ralph Mulligan of the National Coal Association, and several coal producers representing bituminous coal.

Messrs. Willis, Thorner and Adkerson addressed themselves particularly to striking out Section 206 of the House Bill in order to retain the exemption from excess profits tax for companies producing the strategic minerals named above. In the following week when the Finance Committee had the bill under consideration the producers of those minerals were startled to learn that a vote had been taken supporting the House position by 10 to 7. This resulted in instant communication by producers of these minerals in many states with their congressional delegations, with the result that through the efforts of Senator Ed Johnson of Colorado and his associates from mining states the committee reconsidered their action and by a voice vote struck out Section 206 before reporting the bill to the floor.

Other helpful changes made by the Finance Committee in line with recommendations made by mining witnesses were the elimination of the special 10 percent excess profits tax on corporations employing the invested capital credit basis; and the provision for an annual redeclaration of capital stock value.

Changes in Defense Set-up

Although the creation of the new Supply Priorities and Allocations Board may not be the last change in the defense set-up it is of interest to mining and holds forth some measure of promise for improved administration under Vice President Wallace, who is now to become really active, and trained and able Administrator Don M. Nelson as Executive Director. The Board of seven members further consists of the Secretary of War, Secretary of Navy, Director Knudsen of OPM, and Labor Director Hillman of OPM, Harry Hopkins, and Leon Henderson. Henderson will function not only as price administrator but will also be in charge of the new OPM Civilian Supply Division. The action eliminates OPACS (Office of Price Administration and Civilian Supply) as such and is intended to quash the former obstructive rivalry between OPM and OPACS. Chief hope for constructive results from the new order lies in the recognition that Wallace and Don Nelson are able, hard workers.

Mine Equipment Problems

In the past month the P-23 preference rating order which the American Mining Congress succeeded in securing for the manufacturers of mining machinery and equipment and which carries an A-3 preference rating, has aided the mining industry to a very material extent. OPM officials advise that 85 manufacturers of mining equipment are now using this order and that a supplemental list of mining manufacturers will soon be approved which will bring the total to well over 100. The Maintenance and Repair Order P-22-a, has been suspended because of administrative difficulties but will soon be put into operation again and will enable mining companies to furnish their suppliers of maintenance and repair materials with an A-10 preference rating, which the suppliers in turn can use to secure the materials entering into the fabrication of their products. Many mining companies have found it necessary to use the form PD-1 to expedite shipment on equipment or supplies for which there is immediate need. The entire subject of preference ratings and priorities will be thoroughly discussed at the Metal Mining Convention and Exposition in San Francisco September 29 to October 2 with representatives of the OPM on hand to answer questions and enlarge upon important phases of the problems.

St. Lawrence Project Meets Pork-Barrel

Following the close of hearings on the St. Lawrence Seaway and Power Project the House Committee on Rivers and Harbors voted 17 to 8 to include the project in the large Rivers and Harbors bill which is expected to reach the House floor some time in November. It was indicated at the time of the committee vote that the administration had suggested or had at least given its approval to such handling of the St. Lawrence Project. When the members of the House return on September 15 it is expected that the Committee on Rivers and Harbors will hold hearings on two or three of the other projects in the omnibus bill thus consuming time until late in October.

Court Rules on Portal-to-Portal

The Federal District Court in Birmingham, Ala., has ruled on the portal-to-portal controversy initiated last fall by the Wage and Hour Division of the Department of Labor. Specific cases were brought by the Tennessee Coal, Iron & Railroad Company, Sloss-Sheffield Iron Company, and the Republic Steel Corporation (Southern branch), asking declaratory judgment on the point that the hours of the week worked by miners do not include time spent traveling to and from the working place. The opinion rendered by General Philip B. Fleming, Administrator, Wage and Hour Division, in March, was used by the court in basing its decision which, in effect, makes the traveling time for an underground employe a part of his working time. The court went on to include time spent in obtaining and returning lamps, carbide, tools, and also time consumed in checking into and out from work as a part of the workweek.

The finding of the court is the most recent event in a series of conferences and hearings beginning with a call upon Administrator Fleming in his Washington office last October by a group of iron ore miners from the Birmingham region accompanied by some officials of the International Union of Mine, Mill and Smelter Workers, a CIO affiliate.

(*Continued on page 71*)

PERSONALS

Appointment of **Elmer W. Pehrson** as Chief of the Economics and Statistics Branch, U. S. Bureau of Mines, was recently announced. At the same time it was stated that the Bureau's economics and statistics activities will be greatly expanded to meet the increased needs of the defense agencies and to fill a long-recognized need for additional statistical data on the mineral industries.

Mr. Pehrson, a mining engineer and economist, has been acting head of the Economics and Statistics Branch since the retirement of James W. Furness in May 1940, and as Chief of the branch will continue to direct the collection, compilation, collation, interpretation and publication of statistics and data on minerals, mineral products and the mineral industries.

A recognized specialist on the economics of mineral industries, Mr. Pehrson is serving as a representative of the Department of the Interior on various Government defense committees. He is a member of the Interdepartmental Committee on Strategic Materials, and the Army and Navy Munitions Board Committee on Strategic Materials, Specifications and Storage; and is secretary of the Minerals Advisory Committee to the Army and Navy Munitions Board.

A. E. Stanton has been elected by the board of directors of the American Zinc, Lead and Smelting Company to the position of vice president. Mr. Stanton has been connected with the American Zinc Company since 1906 and has been vice president of a subsidiary, the American Zinc Company of Illinois, since 1940. His office will continue to be located in St. Louis, Mo. At the same time, the American Zinc, Lead and Smelting Company announced the promotion of **Noel S. Worrell** to the position of general traffic manager, with office also in St. Louis. He has been in the employ of the company and its subsidiary, the American Zinc Oxide Company of Ohio, with offices in Columbus, Ohio, since 1920. He served as assistant traffic manager after 1929, and was also manager of central district sales since 1938.

Charles Dorrance, president of the West Virginia Coal and Coke Co., testified recently at the tax hearings before the Finance Committee of the U. S. Senate in Washington. Other industry witnesses appearing before the committee were: **Andrew H. McIntyre**, secretary and treasurer of the New River Company; **J. F. Caulfield**, treasurer of the Elk Horn Coal Corporation; **Louis F. Tanner**, representing the Davis-Wilson Coal Company; and **John B. Eichenauer**, representing the Pittsburgh Coal Company and Union Collieries Company.

Edward Smith of Phoenix, Ariz., is in charge of exploration and development work on the Big Four group of gold mining claims in Rackensack Gulch, northeast of Phoenix.

V. L. Board, a graduate of the Colorado School of Mines and a member for many years of the Colorado Society of Engineers, has been appointed district manager of the Denver office of the Priorities Division of the OPM, with office in the National Bank Building.

H. Foster Bain, advisor on mineral resources to the President of the Philippine Islands, is completing a brief stay in this country and is returning to Manila on the Clipper the first part of September.

R. C. Allen of Cleveland, president of the Lake Superior Iron Ore Association, has returned to his former duties with the Office of Production Management in Washington, where he was in charge of matters relating to iron ore, scrap and pig iron. Mr. Allen had resigned from the OPM the latter part of June.

W. G. Gregory, vice president of the Binkley Coal Company, was toastmaster at a recent banquet in Kansas City, sponsored by the company and attended by approximately 225 persons, at which the advantages of handling and selling coal briquets were presented to dealers and sales employes.

R. L. Ireland, Jr. was elected president and chairman of the board of the Ohio Coal Association at their latest annual meeting. Other officers elected at the same time were: **E. H. Davis**, vice president; **Ezra Van Horn**, executive vice president; **E. H. Miller**, secretary and treasurer; and **F. H. Bohecker**, assistant secretary and assistant treasurer.

Robert M. MacIntosh has been appointed head of the division of analytical chemistry at Battelle Memorial Institute, Columbus, Ohio.

Robert M. Reid has been made assistant manager of the traffic department of the Tennessee Coal, Iron & Railroad Company, with headquarters in Birmingham. He was promoted from the position of chief of the rate bureau of the department, and has been connected with the company since 1917.

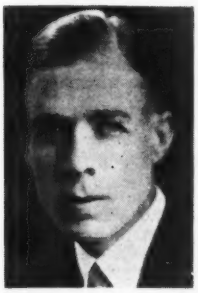
Dr. Curtis L. Wilson has been appointed dean of the Missouri School of Mines and Metallurgy at Rolla, Mo., succeeding **Dr. William R. Chedsey**, who has resigned. Dean Wilson assumed his new duties at Rolla on August 1.

The new head at Rolla was graduated from the Montana School of Mines in 1920. After working for a year in various capacities with the Anaconda Copper Company at Butte, Dr. Wilson joined the faculty of the Montana School Mines as instructor and was later promoted to the head of the metallurgy department. In 1926 and later years he spent 27 months in Europe, during which time he received the degree of Doctor of Philosophy from the University of Goettingen in Germany. For the past 13 years he has been professor of metallurgy and head of the metallurgical department at the Montana School of Mines, Butte.

L. E. Woods was recently elected chairman of District Board 8, embracing the Southern Appalachian high volatile fields. **M. L. Patton** was elected first vice chairman and assistant secretary; **J. K. Taggart**, second vice chairman; **Wayne P. Ellis**, secretary; and **Fred E. Gore**, treasurer.

Paul Tyler of the U. S. Bureau of Mines, **B. C. Burgess** of the United Feldspar and Minerals Corporation; **G. R. Mansfield** of the U. S. Geological Survey; **John D. Sullivan** of the Battelle Memorial Institute; **William M. Weigel**, mineral technologist of the Missouri Pacific Railroad; **M. M. Leighton**, chief of the Illinois Geological Survey, and **Oliver C. Ralston** of the U. S. Bureau of Mines, were among those recently appointed by E. R. Stettinius, Jr., to a technical committee to advise the Office of Production Management on nonmetallic minerals. The new group is a special subcommittee of the Advisory Committee on Metals and Minerals which was appointed by the National Academy of Sciences some time ago. **R. P. Heuer** of the General Refractories Company is chairman of the subcommittee.

Otto Herres, formerly assistant to E. H. Snyder, vice president of Combined Metals Reduction Company, Bauer, Utah, has been made manager of the Titanium Division, National Lead Company, operating in Essex County, New York.



Elmer J. Garbella, who for three years has been in charge of the ore testing division of Denver Equipment Company, Denver, was called for active service in the Army on June 16 and reported to Fort Belvoir, Va.

P. M. Snyder has been reelected chairman of District Board No. 7, by the southern West Virginia smokeless operators. Other officers reelected at the same time were **D. A. Newhall**, vice chairman; **R. E. Brockman**, treasurer; **John A. Luse**, executive secretary and assistant treasurer; and **Cornelia Parsons**, assistant secretary.

G. M. Butler, dean of the College of Engineering at the University of Arizona, Tucson, has been named director of the engineering experiment station which the board of regents of the University has decided to establish there. Members of the faculties of the colleges of engineering and mines have been appointed to staff positions with the experiment station.

Walter P. Carroll has been appointed manager of the Chicago branch of the National Lead Company, succeeding E. A. deCampi, who retired the last of June.

N. P. Rhinehart, Chief of the West Virginia State Department of Mines, has announced the appointment of seven additional mine inspectors. The new inspectors, with their home addresses and the districts they will cover, are: **George McIntyre**, Morgantown, in Monongalia County; **W. L. Kidwell**, Whipple, the district about Rainelle; **C. F. Jones**, Fayetteville, in the vicinity of Mt. Hope; **Jay Philpott**, Upper Winding Gulf and Piney district; **Lawrence G. Hurst, Matoaka**, in Mercer County; **Robert J. Marrs**, from Welch, part of McDowell County; and **Edward Smith**, Crumpler, a section around Iaeger in McDowell County.

Edward P. Leach, mining engineer, left the United States in August for Chile, to enter employment at the Tofo iron mines of the Bethlehem-Chile Iron Mines Division of the Bethlehem Steel Company. He had formerly been employed as engineer at the Morenci copper mine development in Arizona of the Phelps Dodge Corporation.

Charles F. Ball has been made director of engineering for the Joy Manufacturing Company. He was formerly chief engineer of the construction division of Chain Belt Company.

Chris G. Dobson has been made general manager of the Cornucopia Gold Mines in the Wallowa Mountains at Cornucopia, Ore., succeeding **A. V. Quine**. For the past five years he had been superintendent of mining at the Howe Sound property of the Brittania Mining & Smelting Company.

Jay L. Hench, who has been vice president of the Hillside Fluor Spar Mines since 1922, has been elected president and treasurer of the company by the Board of Directors to succeed George H. Jones who died on July 6. Other officers include **R. J. Jarratt**, vice president, and **M. J. Lundberg**, secretary.

C. E. Swann, for many years chief engineer of the Union Pacific Coal Co., Rock Springs, Wyo., retired this summer. He has been chief engineer since 1920, prior to which time he had spent many years in the engineering and operating departments.

— *Obituaries* —

Homer S. Snow, vice president and traffic manager of the American Zinc, Lead and Smelting Company, died of a heart attack August 9 at his home in St. Louis. He was 69 years of age. He began his career with the Chicago, Milwaukee, St. Paul and Pacific Railroad, and entered the zinc industry in 1910. In 1914 he joined the American Zinc, Lead and Smelting Company. He was made traffic manager in 1920, and vice president in charge of traffic in 1929. He was past president of the St. Louis Traffic Club and the Associated Traffic Clubs of America.

Floyd William Parsons, of New York, editor and engineer, died on August 7 at the age of 61. He was born in Keyser, W. Va., and attended West Virginia and Lehigh Universities.

He entered the coal mining business in West Virginia, becoming chief engineer of the Stonewall Coal and Coke Co. and subsequently district engineer of the Lehigh Valley Coal Co., Wilkes-Barre. He was resident engineer of the Consolidation Coal Co., Frostburg, Md., and chief engineer of the New River Consolidated Coal and Coke Co., Rush Run, W. Va.

In 1910 he founded Coal Age. For the past 21 years he had been associated with the Robbins Publishing Co.

George B. Agnew, president of the Gauley Mountain Coal Company, Ansted, W. Va., and director of Phelps-Dodge Corporation, died recently at his home in New York City.

Herman Carl Bellinger, former vice president of Chile Copper Company and Chile Exploration Company, and president of Chile Steamship Company, died at Spokane, Wash., on July 27. He was born in 1867 and was a graduate of Freiberg. During his career he served in many capacities, from chemist to general manager, with various copper and lead mining companies throughout the world. From 1909 to 1914 he was general manager of the Great Cobar, Ltd., in Australia, and during 1912 he was president of the Australasian Institute of Mining and Metallurgy. In 1914 he joined the consulting staff of Guggenheim Brothers and in 1916 was appointed general manager of the Chile Exploration Company; in 1920 he was recalled to New York to become vice president in charge of operations of the company. He gradually assumed other responsibilities until his retirement from active service at the end of December, 1940.

Fred A. Elmore, Chicago manager of the Koppers Coal Company, died on July 26 of angina pectoris at the age of 59. He had been district manager for the company since 1929.

Howard E. Foulkrod, secretary of the Emmons Coal Mining Co., Philadelphia, died on July 26 at the age of 50. He was also treasurer of the Big Bend Coal Mining Company; treasurer of the Ideal Lubricator Company; secretary of the Hurlburt Oil and Grease Company; and a director of the All Philadelphia Building and Loan Association.

Clarence E. Wheelock, general superintendent of the Presidio Mine at Shafter, Tex., for the American Metal Company of Texas, died in El Paso in mid-July at the age of 49. He had been with the company for 14 years, all but three of which was spent at Shafter, and for the past two and one-half years he had been general superintendent there.

Horace A. Staples, vice president in charge of engineering, Phelps Dodge Copper Products Corporation, died suddenly on August 25 at his home in Plainfield, N. J. He was 61 years of age.

Mr. Staples had been a vice president since 1933, being affiliated with the National Electric Products Corporation, from which was formed the Phelps Dodge Copper Products Corporation in 1932.

James B. Smith, head of the Scranton Mine Cave Bureau for many years, died July 31 in Scranton, Pa., at the age of 69. He was appointed chairman of the Pennsylvania Mine Cave Commission during the administration of Governor Sproul.

Clifford T. Oughtred, an executive of the Consolidated Mining and Smelting Company was killed this summer in an automobile accident near New Denver, B. C. He had been with the company since 1914; and was at Trail, B. C., and took part in the notable development of concentration which took place there.

NEWS and VIEWS

Recent Priority and Export Control Actions Affecting Metals

OPM has announced a revised priorities critical list of approximately 300 items and classes of items. Included are practically all metals and a variety of other materials; also a large number of finished products, prominent among which are electric motors, including those of fractional horsepower. The list is divided for convenience into two sections, raw materials and finished products. Articles on this list may be secured by mining machinery and equipment manufacturers on a priority status under Preference Rating Order P-23, and by mining companies (for maintenance and repair purposes) under Order P-22-a.

* * *

A questionnaire prepared jointly by OPM, OPACS, Bureau of Mines, and the Census Bureau has been mailed to the first of 65,000 users of strategic materials in an effort to obtain statistical data which will prove helpful to the defense program. Those receiving the questionnaire will be asked to report the quantities on hand and uses made during August of the following: Antimony, cadmium, chromium, cobalt, copper, ferro-alloys, iridium, lead, manganese, murcury, molybdenum, non-ferrous alloys, tin, vanadium, tungsten, zinc and scrap metal containing any of these.

The completed forms when returned to Washington will be tabulated on punch-card machines by the Census Bureau and also used by OPM for administrative check-ups by the Priorities Division. Thus not only the disposition and quantities but also the uses of existing stocks will be established. When the information from the questionnaire is combined with the figures on imports compiled by the Bureau of Foreign and Domestic Commerce, and Bureau of Mines data on the output of mines, smelters and refiners, an overall picture of the use, stocks and distribution of 90 percent of the listed metals will be available.

It is expected that another questionnaire will soon be sent out to wholesale dealers in these metals.

* * *

Administrator Maxwell has placed a long list of additional commodities under export control. These commodities include practically all wood pulp, metals and manufactures, machinery and vehicles, rubber and manufactures, and chemicals and related products not listed in previous schedules. Inclusions of these articles under export control would bring the total list of controlled commodities up to approximately 80 percent of the total value of exports for the first 5 months of 1941. The new items are listed in Export Control Schedule No. 17 which will become effective on August 29.

* * *

OPACS Administrator Henderson has announced a price schedule for copper scrap which establishes price differentials of from 2 cents to 4 cents a pound below 12-cent copper for the leading kinds and grades of scrap. A uniform dealers' margin of ¾ cent a pound for collecting, sorting, storing and shipping also is allowed. Top prices of 10 cents per pound for No. 1 copper wire and No. 1 heavy copper are fixed by the schedule.

* * *

Administrator Henderson has warned that prices of lead scrap have risen to a point where their normal relationship to the price of virgin lead has been lost and some hoarding of scrap is taking place. He stated that if it became necessary to establish ceiling prices, they would be set considerably below current levels.

* * *

Full priority control has been given vanadium under an order recently signed by Priorities Director Stettinius. This order assigns a rating of A-10 to all defense orders for vanadium to which this rating or a higher one has not been specifically granted and requires the acceptance of such orders in preference to non-defense orders. The commodity has been subject to inventory control provided by General Metals Order No. 1, from which it is now removed. The new order requires that after September 1 a manufacturer wishing to purchase vanadium must file a statement of the uses to which it is to be put, not later than the 25th of the month preceding that of specified delivery.

* * *

Copper was placed under additional priority control in an allocation order signed by E. R. Stettinius, Jr., Director of Priorities.

Unlike the previous order, which provided that non-defense orders might be filled after a stipulated amount of copper had been set aside for a pool and all defense deliveries had been met, the new order requires that after August 6 no deliveries of refined copper can be made except upon specific directions of the Priorities Director.

These will be given by means of allocation certificates issued to fabricators and dealers. Exception is made in the case of manufacturers who customarily buy from dealers, and who may continue to do so in their usual quantities without the necessity of an allocation certificate.

Inventory control is exercised by provisions which prohibit purchases of copper from dealers, and of copper alloys and copper products from any source, in excess of the amount required by a manufacturer to fill orders at his customary rate of production.

The order assigns a preference rating of A-10 to all deliveries for defense orders which have not received a higher rating.

One paragraph of the order requires the acceptance of defense orders by dealers and manufacturers of copper products and copper-base alloys, and requires that *all these* be given priority over non-defense demands. Another provides that the restrictions imposed on deliveries of copper are applicable to intra-company transactions. This means that sales or transfers of metal to affiliated or subsidiary companies, and even by one division of a single company to another, are subject to control by the Director of Priorities.

Manufacturers and dealers who customarily obtain their supplies of copper from refineries should apply to the Copper Commodities Branch of the Office of Production Management for the necessary allocation certificates.

* * *

Following the recent reorganization of OPM and other defense agencies, the Office of Price Administration announced that all price orders issued previously by OPACS would stand.

Alaska Mine Improves Plant

Gold production of the Independence Mine will be increased shortly through the addition of a $30,000 wash plant it was recently stated in Alaska by C. L. Harrison, president of the Alaska Pacific Cons. Mining Co., who was in Anchorage after making his annual inspection of the mine. The property comprises 47 claims in the Willow Creek District near Wasilla.

Mr. Harrison said that various improvements are under way on the surface structures as well as in the development of new property to extend mining operations into new properties.

The mine, known throughout Alaska as the Independence Mine, is outranked only by the Alaska Juneau Mine for gold production and has attracted wide attention in the mining world for its modern methods of operation and modern facilities.

Coeur D'Alene Mine Purchases Rainbow Stock

Coeur d'Alene Mines Corporation, with properties at Wallace, Idaho, is reported to have purchased a 51 percent interest in the Rainbow group of mining claims from the Rainbow Mining & Milling Company. Part of the group, consisting of 22 patented claims in the Evolution District, immediately joins the Coeur d'Alene Mines property on the east. The Coeur d'Alene Mines Company has been doing considerable diamond drill work east of what is known as the Mineral Point fault.

The deal includes all of the Rainbow holdings, consisting of four groups of mining claims in the western end of the Coeur d'Alene District. The No. 2 group is located in the Little North Fork District near Enaville and consists of about 60 acres of mineral ground. The Nos. 3 and 4 groups are located about 16 miles southwest of the Bunker Hill Mine in the Medimont District and consist of 20 patented and 11 unpatented mining claims.

The Rainbow Company has developed this property with about 6,000 feet of tunnel work and is reported to have developed a large body of mixed zinc-lead-silver-copper ore similar in character to the complex ores of the Sullivan Mine in British Columbia.

Electric Heaters for Stripping Shovels

Cold-weather damage to the big 30-yard stripping shovel of the Truax-Traer Coal Company of Fiatt, Ill., has been largely eliminated by electric heaters. The main problem confronting the Company was that the dipper handle of its big shovel sometimes snapped during winter operation, as a result of the chilled condition of the metal. Each breakdown meant an expensive repair bill, plus the expense of idleness.

This danger has been averted to a considerable extent by the installation of twelve 2,000-watt 230-volt resistance heaters around the inner surface of the dipper handle. The heaters are fastened to the surface of the dipper handle in lines of four, one line being placed in the center of the bottom of the handle, and a similar line run along each side of the handle.

Heaters were installed on the dipper itself, to solve another costly cold-weather problem. In cold weather, mud froze to the sides and bottom of the dipper, gradually accumulating until the payload of the dipper was reduced by 50 percent or more. Bonfires and a shut-down of 30 minutes to an hour were necessary to thaw out the accumulated mud.

To solve this problem, electric hotplates were welded on each side of the dipper, and on the center panel of the door. Another heater was formed in a circle around the manhole entrance to the dipper handle, where it joins the dipper. A thermostat was set to close the circuit at 25 F., since no trouble was experienced above that temperature.

Arizona Magnesite Mined

Mining operations are now underway at the magnesite deposits in Nye County, Nev., recently purchased by companies allied with the Permanente Corporation, builder of the $10,000,000 magnesium plant near Los Altos, Calif.

The Barium Products Co., allied with Westvaco Chlorine Products Corporation, is conducting the mining operations and at present is shipping approximately 50 tons daily to Newark, Calif. The scene of operations adjoins the claims of Basic Ores, Inc., large scale producers of brucite, who are reportedly shipping 200 tons daily to their refinery near Cleveland, Ohio.

Work necessarily preceding the completion of the reduction plant at Permanente is now being undertaken at the mine, and bunk houses, a laboratory, storeroom building and an office building have already been completed.

At present, the ore is being trucked to Luning and shipped by rail to the coast.

Uncle Sam's Technologists Aid Defense Program

The country's outstanding specialists in the field of non-metallic minerals have been formed into an advisory group to deliberate technological problems vital to the nation's defense, the Office of Production Management has announced. The group is a subcommittee of the Advisory Committee on Metals and Minerals which was appointed by the National Academy of Sciences and of which Clyde E. Williams, director, Battelle Memorial Institute, Columbus, Ohio, is chairman.

The membership of other sub-groups of the Advisory Committee, namely, Ferrous Minerals and Ferroalloys, Metals Conservation and Substitution, and Tin Smelting and Reclamation, have been previously announced.

The newly-announced Non-Metallic Minerals Group is preparing reports for the Office of Production Management on graphite, mica, asbestos, and other strategic minerals.

Committee of Solid Fuel and Allied Interests Reorganized

Representatives of the bituminous coal industry, the by-product coke industry, retail dealers, railroads, and railroad and mine labor organizations, held a meeting in Washington in late July for the purpose of reorganizing a committee which had been created last fall, entitled "Joint Committee of Solid Fuel and Allied Interests." One of the objectives of this committee has been the passage of an amendment to the Natural Gas Act of 1939, in order to obtain the privilege for organizations such as this to appear before the Federal Power Commission in opposition to proposed new pipe lines, with the full right of participation; that is not possible under current interpretations of the Act.

The Joint Committee was originally created with a chairman, George D. Horning, Jr., who has resigned and assumed active service with the United States Navy. In the reorganization, replacing the chairman an executive committee was created to guide the future progress and scope of the work. The new executive committee consists of the following:

F. F. Estes, traffic manager, National Coal Association. (Also to serve as secretary, general and executive committees.)

J. C. Greenway, regional director, Association of American Railways, Eastern Region.

W. K. Hopkins, chief counsel, United Mine Workers of America.

J. G. Luhrsen, executive secretary, Railway Labor Executives Association.

Louis C. Madeira, III, executive director, Anthracite Institute.

C. A. Miller, vice president and general counsel, American Short Line R.R. Association.

A. M. Ogle, By-Product Coke & Gas Producers Mid-Western Association.

John Schreiber, coordinator, Retail Solid Fuel Industry in the City of New York.

Dredge on Tuolumne River

Yuba Consolidated Gold Fields, Ltd. of San Francisco, plans installation of a 650-horsepower gold dredge on the Tuolumne River near the Turlock, Calif., reservoir. Under a proposed contract the Turlock Irrigation District would construct a power line to the dredge at a cost of $40,000. According to estimates, the dredge would use $2,000 worth of power monthly, and work would continue for eight years. The company is reported to have taken up its options on grounds in the Timbuctoo, Mooney Flat and Smartville areas, Yuba County.

West Virginia Miners Have Big Pay Day

An Associated Press dispatch from Charleston, W. Va., the first part of August, reported that in late July, West Virginia miners received one of the largest pays on record. The dispatch stated:

"Several factors combined to make the payroll a record breaker in some counties and a record equaler in others. A two-year agreement reached July 6 by the United Mine Workers and 13 southern operator associations, made the basic wage scale $7 a day, retroactive to April 1. During April only maintenance men had worked, but from May 1 until the contract was signed miners worked under a temporary pact at a $1 a day increase over the old basic wage of $5.60. Thus the miners had an additional 40 cents a day coming to them, and a majority of companies paid that today.

"Then employes with service records of a year or more received token vacation payments of $20 each. Added to the factors of higher wages, the retroactive 40 cents, and pay for the five-day fourth of July vacation are increased production (affecting those paid on a tonnage basis) and more days per week of operations.

"No one knew the exact size of the payroll, but in Logan County it was estimated at between $500,000 and $600,000, the largest since 1927.

"In Mingo County most of the 10,000 miners of the Williamson field found an extra $20 to $40 in their envelopes. Bank officials, who make up many of the payrolls, said that the payoff for the first half of July had set a new record in the field and that the payroll for the second half was 10 percent larger.

"J. J. Lincoln of Elkhorn, president of the Pocahontas Operators Association, said the payroll was the largest in the history of the field. Unable to estimate its size in dollars, he expressed an opinion it was twice as large as usual."

New Iron Mine Named Mather

The Section Two iron mine at Ishpeming, Mich., operated by the Cleveland-Cliffs Iron Company, was, with appropriate ceremonies on August 1, named the "Mather" Mine, after W. G. Mather of Cleveland, the dean of the Marquette iron range, where the mine is located. Mr. Mather is chairman of the board of directors of the Cleveland-Cliffs Company.

Shaft sinking is now underway and is planned for a depth of about 3,000 feet. A double drum electric hoist, designed to handle 12 tons of ore per skip will serve the Mather Mine and a hoist will also operate double deck cages handling 75 men per trip. The mine will be brought into production soon and will supplement the output from the Negaunee iron mine nearby.

Sunshine Company Building Oregon Dredge

The Burnt River Division of the Sunshine Mining Company is building a 4-foot bucket-line dredge on Burnt River near Whitney, Ore. The dredge will be owned jointly by the Sunshine Company and the Idaho Canadian Dredging Company.

Additional Field Offices For OPM

E. R. Stettinius, Jr., Director of Priorities, recently announced the opening of three new offices of the Priorities Field Service.

The new offices are located in Atlanta, Ga.; Cincinnati, Ohio, and San Francisco, Calif.

Field offices of the Priorities Division have previously been opened in 10 other cities. These offices are under the direction of L. Edward Scriven and E. C. Laird, Jr., Assistant Deputy Directors, and are located in Boston, New York, Philadelphia, Chicago, St. Louis, Denver, Detroit, Cleveland, Dallas, and Pittsburgh.

John B. Reeves will be district manager for the field service in Atlanta and will have his office in the Federal Reserve Bank in that city. Andrew L. Kerr will be district manager in San Francisco and will have his office in the Federal Reserve Bank there. Bruce W. Burroughs of Cincinnati, Ohio, will be district manager for that city. His office will be in the Union Trust Building.

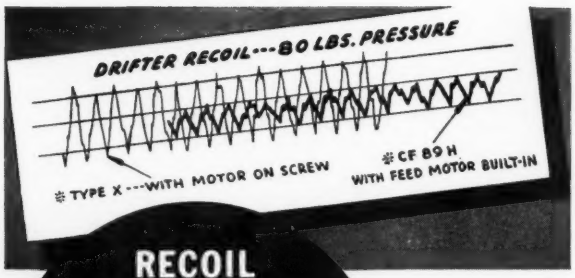
Michigan Copper Producers Protest to Henderson

Copper Range Company, Isle Royale Copper Company, and Quincy Mining Company recently sent the following telegram to Leon Henderson, Director of OPACS, protesting the proposal to allow high cost copper producers only a 1 cent increse in price:

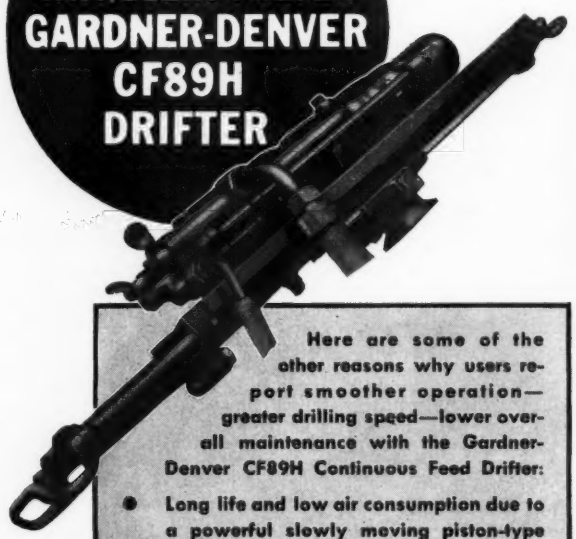
"Your proposal to Metals Reserve Company to buy output of high-cost copper producers at 1 cent above average cost for first half of 1941 feasible only if proper wage increase first included and cost figured, according to accounting principles accepted by United States Treasury Department, Securities and Exchange Commission, and Federal Tariff Commission, to include depreciation and depletion. Wage increase must be figured in to compensate for increased cost of living since September 24, 1940, date of last price rise in copper. Your testimony before Congress yesterday, states 'pronounced increase in cost of living inevitable.' Increase in cost of producing copper also inevitable. The government must assume responsibility for living wage for men and for mine if it fixes price for copper. J. W. Finch, former Director, Bureau of Mines, states rapidly changing conditions now affect every factor entering into production and government should modify price as these conditions demand, and asserts increase of 5 cents necessary to conserve mineral resources. (See July issue MINING CONGRESS JOURNAL.) To require mines to sell copper to government with no allowance for cost of property and plant expenditure would contravene Fifth Amendment to Constitution, reading 'nor shall private property be taken for public use without just compensation.'"

Ten Canadian Ore Boats Available

Ten Canadian cargo ships have been made available to transport iron ore between American ports. According to reports from Washington, additional Canadian vessels will be put in the American iron ore trade shortly.



RECOIL TESTS SHOW WHY USERS PREFER GARDNER-DENVER CF89H DRIFTER



Here are some of the other reasons why users report smoother operation—greater drilling speed—lower overall maintenance with the Gardner-Denver CF89H Continuous Feed Drifter:

- **Long life and low air consumption due to a powerful slowly moving piston-type feed motor.**
- **Direction of feed, as well as power and speed, fully controlled by feed throttle.**
- **Controls conveniently located in drill back-head.**
- **Higher drilling efficiency assured because drill is always held in proper relation to the shank.**

TEST machine chart shows results of recoil test on the Gardner-Denver CF89H Drifter, VS. Type X Drifter. Note how the line at the left records the extreme recoil of Type X Drifter, an ordinary drifter with feed motor mounted on screw. Note, also, the steadier, smoother action of the Gardner-Denver CF89H Drifter, indicated by the heavy line which extends to the right. In the CF89H, the weight of the feed motor BUILT INTO THE DRILL proper aids in absorbing recoil—reduces vibration.

For complete specifications write Gardner-Denver Company, Quincy, Ill.

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Clean your coal the RS AND COMPANY way

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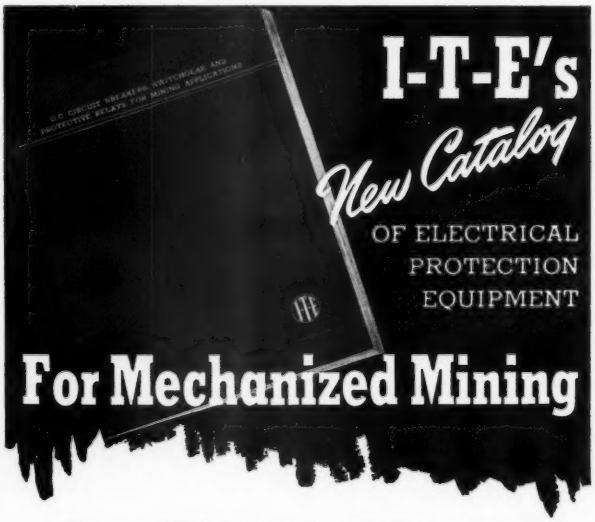


The new I-T-E Catalog No. 2502 is a complete description of d-c circuit breakers, switchgear and protective relays for mining applications. Its completeness recommends it particularly to those who are engaged in or contemplating mechanized mining.

Send for your copy on your company letterhead.

I-T-E CIRCUIT BREAKER CO.
PHILADELPHIA, PA.

99.99+Percent Pure—*A Correction*

It may be pardonable on the part of a proofreader not to know of the advances made in recent years in the technique of fire smelting of zinc, but an editor should know. Therefore we hasten to call attention to, and correct, a slip which occurred in the article "Adequacy of Certain Mineral Resources," by John Wellington Finch in the July issue of the JOURNAL. The author, referring to zinc, stated, "Also, there has been great recent improvement in furnace refining which now produces zinc 99.99+ percent pure, fully equal to electrolytic zinc."

In proofreading and printing, the final "9" was omitted from the percentage figure thus, however inadvertently, reflecting on this substantial achievement of the zinc metallurgist. Our apologies are in order.

National Safety Congress and Exposition in October

The 30th National Safety Congress and Exposition of the National Safety Council will be held at the Stevens Hotel in Chicago, October 6-10, inclusive. Plans have been completed for sessions devoted to the special safety problems of various industries, as well as entertainment features including the President's Dance on Monday evening, October 6, a luncheon meeting of the Association of Safety Council Executives October 8, and special entertainment features for the ladies throughout convention week.

The safety problems of specific industries will be discussed at the many sessions. While many sessions will be of general interest to mining men, the mining section of the Council will hold meetings on the afternoons of October 6, 7 and 8, with a luncheon on October 8 at the Congress Hotel.

The general chairman of the mining sessions is Cadwallader Evans, Jr., vice president and general manager of the Hudson Coal Company, Scranton, Pa. The first meeting will be devoted to a discussion of methods of allaying dust in underground mining operations. The Tuesday afternoon meeting will be devoted to a symposium on problems in mine safety, and on Wednesday, other phases of mining safety problems will be discussed.

Elton Tunnel Completed

The five-mile Elton Tunnel which runs from Bingham Canyon to Tooele, Utah, was scheduled for completion in August of this year.

Driven by the National Tunnel and Mines Company, the bore was started in June 1937, and is being completed ahead of schedule. The tunnel will service the main transportaion and haulage adit and will drain the properties it taps at a depth of 2,500 ft. The water will be available for irrigation. The mines below the tunnel will be kept unwatered by pumping to a depth of 3,300 ft.

Portal To Portal Decision

A decision of a Federal District Court upholding the wage-hour modified portal to portal opinion on the work week in iron mines has been announced by the Wage-Hour Division. The decision came in the case of the Tennessee Coal, Iron & Railroad Company, Sloss-Sheffield Steel and Iron Company, and Republic Steel Corporation for a declaratory judgment that the miners' work week does not include time spent in reaching their working place after entering the mine, nor in returning to the surface at the close of the shift. Also involved in the suit were three locals of the CIO union of mine, mill and smelter workers. The Wage-Hour Division intervened in the case.

The judge in handing down the decision pointed out that the conclusions reached were based on the portal to portal opinion of the Administrator of last March. Generally, it was held that time spent in going to the place of work and returning from it at the end of the day was part of the work week of an employe for which payments should be made. Time spent on the surface in obtaining and returning lamps, carbide and tools and in checking in and out was held to constitute time worked. Periods for lunch during which the miner was relieved of all duties were not considered a part of the work time.

It will be recalled that conferences on this matter were held in Salt Lake City and Birmingham, under the auspices of the Division, before the Administrator's opinion was announced.

Hearings on Maximum Bituminous Prices

Hearings were slated to begin September 9 in Washington before Chief Examiner C. R. Larrabee of the Bituminous Coal Division on petition of Bituminous Coal Consumers' Counsel for establishment of maximum prices under the Coal Act.

The order by Director Gray of the Coal Division, fixing this date for the hearing, followed conferences between himself and Dr. Luther Harr, Consumers' Counsel, and representatives of producing interests, including a number of district boards in the eastern part of the country. Dr. Harr has sought a prompt hearing on his petition to fix maximum prices but the producing interests demurred on the ground that fixing of maximum prices is not necessary at this time and that a hearing on the subject would be premature before the hearing is completed in General Docket 21, relative to costs and possible adjustment of minimum prices based on wage increases.

Wheels

(*Continued from page* 63)

Federal Coal Mine Inspection

To assist by consultation in the administration of the Coal Mine Inspection Act the Secretary of Interior has appointed an advisory committee with the following personnel: Cadwallader Evans, Jr., Hudson Coal Company; L. C. Campbell, Koppers Coal Co.; T. J. Thomas, Valier Coal Company; and Percy Tetlow, John T. Jones, and Thomas Kennedy for the United Mine Workers of America. The Committee has held one meeting in Washington and will hold additional meetings as deemed advisable. The Health and Safety Branch of the Bureau of Mines is proceeding with the selection of additional personnel to carry out the purposes of the Act and it is sincerely to be hoped that under the Act as written the excellent record of past years in reducing accidents will be maintained.

Following the filing of a petition by the Consumers Counsel an order has been issued by the Bituminous Coal Division, Department of Interior, for a public hearing on September 9 to consider establishment of maximum prices for bituminous coal. Producers Boards and Regional Marketing Agencies have been invited to submit schedules of proposed maximum prices and it is anticipated that action may ultimately be taken on the material furnished by the twenty-one Boards and the fourteen Regional Marketing Agencies.

Official announcement has just been made of the appointment of Elmer W. Pehrson as Chief of the Economics and Statistics Branch, U. S. Bureau of Mines. A mining engineer of California and from Stanford University, with broad experience, Mr. Pehrson has also served with the Bureau of Internal Revenue and has given important assistance to the defense agencies for the past two years.

Successful A. I. M. E. Regional Meeting on Mesabi Range

The A. I. M. E. Regional Meeting held in Minnesota on August 12 to 14 inclusive, was a very successful combination of technical sessions and well-conducted field trips. A total of about 400 attended and numerous comments were heard on the excellent planning and the expeditious manner in which the arrangements were carried out. The first day was devoted to registration, with a technical session in the afternoon. Papers presented were as follows: "Minnesota's Iron Mining Industry," by Earl E. Hunner, Gen. Mgr., Lake Superior District Iron Mines for the M. A. Hanna Company; "Mining Practice and Mine Transportation in Minnesota's Iron Mines," by Grover J. Holt, Ass't to Vice Pres., Butler Bros.; "Drilling in Stopes at the Soudan Mine, Vermilion Range, Minnesota," by W. P. Wolff, Chief Mining Engr., Vermilion District, Oliver Iron Mining Company; "Developments in the Concentrating of Minnesota Iron Ores," by T. B. Counselman, Manager, Industrial Division, The Dorr Co., Inc.; "Flotation of Mesabi Range Wash Ore Tailings," by John A. Searles, Ass't Prof. of Metallurgy, University of Minnesota; "Rail and Vessel Transportation of Minnesota Iron Ore to Lower Lake Ports," by E. H. Dresser, Chief Engr., and W. A. Clark, Engr., Duluth, Missabe & Iron Range Railway Company.

Most comfortable and complete arrangements had been made for a two-day inspection trip of the Mesabi Range, leaving Duluth on the morning of August 13. Ten comfortable air-conditioned busses were provided, with special observation trains constructed to take parties into various open pits along the Range. The first stop was at the Trout Lake concentrator at Coleraine, followed by a picnic luncheon on the shore of Trout Lake. In the afternoon the Canisteo open pit mine and concentrator of the Canisteo Mining Company was visited, followed by a trip to the Hill-Annex mine. The night was spent at Hibbing, Minn., where all guests were well cared for. A banquet was held in the Hibbing Memorial Building, where the ice show of the St. Paul Figure Skating Club had been especially engaged for the occasion.

On Thursday the trip was resumed, visiting the Albany open pit mine and then a long rail trip through the extensive pit area of the Hull-Rust-Mahoning mine, with a trip to the Susquehanna open pit mine completing the morning program, before lunch was served in the Recreation Building at Virginia, Minn. Following lunch, the caravan went on to Eveleth and visited the Spruce open pit mine. En route back to Duluth that evening, the caravan visited the Proctor ore yard, where ore cars are classified and made up into trains for delivery to the ore-loading docks at Duluth. Some of the ore-loading docks were also passed at close range. Many visitors remained over Friday, August 15, to take trips about the Duluth-Superior harbor to view the ore docks and the loading of lake cargo-carriers. Many visitors also went through the Duluth plant of the American Steel and Wire Co.

Altogether it was voted one of the most enjoyable and carefully arranged regional meetings ever held.

Minerals Yearbook Out in September

The U. S. Bureau of Mines has announced that in response to unprecedented demand for comprehensive information on metals, nonmetals, fuels, and mineral products, from the mineral industries and from Government defense agencies, publication of its Minerals Yearbook has been advanced more than three months over last year's date.

The current edition of Minerals Yearbook was placed on sale by the Superintendent of Documents early in September.

Maximum Coal Prices Considered

The Bituminous Coal Division of the Department of the Interior has called upon the Bituminous Coal Producers' Boards and the Regional Marketing Agencies to propose schedules of maximum prices for bituminous coal.

A Division order provides for submission of the proposals in connection with a public hearing in early September on a petition filed by the Bituminous Coal Consumers' Counsel requesting the establishment of maximum coal prices.

The Division stated that the 21 boards and the 14 provisionally approved regional marketing agencies have had extensive experience in the marketing of bituminous coals in all consuming market areas and therefore are in a position to furnish information to the Division, in respect to maximum prices which will meet the standards prescribed by the Coal Act, for consideration in the event such maximum prices are established by the Division.

The order provides for the proposal of maximum prices, in terms of uniform increases above effective minimum prices, or by other methods, which will yield a reasonable return above the "weighted average" cost of producing coal for each district.

Defense Advisory Committee Named for Copper and Zinc Industries

In early August, the Office of Production Management announced the formation and personnel of the Defense Industries Advisory Committee for the copper and zinc industries, consisting of 35 men representing the five principal divisions of the industry, copper producers, zinc producers, brass and copper, sheet rolling and tube forming industry, copper wire and cable manufacturers and zinc fabricators. John A. Church of the Division of Priorities was designated presiding officer of the committee.

Anthracite Prices Reviewed

In July the upward trend of anthracite prices was discussed at a meeting between the Office of Price Administration and Civilian Supply and representatives of principal Pennsylvania hard coal producers.

Extensive data were submitted by industry representatives for study and analysis by OPACS' staff in the light of that agency's specific interest in preventing unreasonable price increases during the present emergency.

The meeting was attended by representatives of Glen Alden Coal Co., Scranton, Pa.; Hudson Coal Co., New York, N. Y.; Jeddo-Highland Coal Co., Jeddo, Pa.; Lehigh Navigation Coal Co., Philadelphia, Pa.; Pennsylvania Coal Co., Scranton, Pa.; Lehigh Valley Coal Co., Wilkes-Barre, Pa.; Philadelphia & Reading Coal & Iron Co., Reading, Pa.; Susquehanna Colliery Co., Philadelphia, Pa.; and also by S. D. Ringsdorf, president of the Anthracite Operators' Association, Wilkes-Barre, Pa.

Morgenthau Would Stop Silver Purchases

Testifying before the Senate Finance Committee on August 8, Secretary Morgenthau of the Treasury made a statement that, if followed, would seriously affect the mining industry of the western states. He said that "if you want to strike all silver legislation off the books it will be all right with me." The statement was made during testimony by the Secretary on the $3,500,000,000 House-approved tax bill.

The silver legislation includes an act setting a figure of approximately 77 cents an ounce for domestically-mined silver and a law authorizing the Treasury to buy foreign silver at prevailing prices. Senators from the West have fought for years to maintain the governmental buying program.

Colorado Association Presents Public Lands Program

At a hearing held in August in the post office at Denver, Colo., the Colorado Mining Association endorsed and presented to the U. S. Senate Public Lands Committee a five-point program which the Association recommended as best serving the interests of the mining industry.

The five points were as follows:

1. Opposition to any policy which would do away with the present system of mine locations and patents.

2. Opposition to extension of national parks or monuments unless the multiple use principle is recognized.

3. Plea for adjustment of freight rate differentials to permit development of strategic mineral deposits in the west.

4. Opposition to application of rules and regulations of Securities and Ex-

change Commission to the mining industry.

5. Plea for use of funds of the RFC mine loan division for development of mines rather than for promulgation of red tape and perpetuation of bureaucrats.

Southern Appalachian Industrial Exhibit

The Seventh Annual Southern Appalachian Industrial Exhibit was held at Bluefield, W. Va., on August 21 to 23, inclusive. A large list of exhibitors took part and the program featured industrial moving pictures, as well as special features including the Pioneer Miners Club ceremony, the introduction of new members and award of prizes. The show was held in the Norfolk & Western Railroad freight terminal and was sponsored by the Pocahontas Electrical and Mechanical Institute in cooperation with coal mining and industrial interests.

Record Volume of Iron Ore Moved

The movement of iron ore on the Great Lakes during July totaled 11,390,485 long tons setting an all time record for any single month, according to reports made to Ralph Budd, Transportation Commissioner, by the Lake Superior Iron Ore Association.

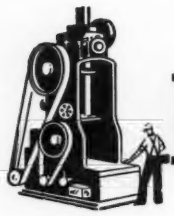
Christopher Mining

(*Continued from page* 43)

executive. As a consequence, our transmission lines are of proper capacity to supply the power needed for the operation. We figure that the maximum distance from the substation to the working faces should not exceed 5,000 ft.; our substations are set according to this specification. This is situated on the surface and a 250-volt d.c. cable is brought down through a bore hole. Leading from the bottom of the bore hole there is a 6/0 trolley and a 1,000,000 CM cable which extends on the main entry to beyond the intersection of the first secondary haulway going to the extreme left unit; from this point to the end of the secondary haulway in the other two units, the feeder is reduced to 500,000 CM. Our general rule is not to have more than 2 units on a 500,000 CM feeder. All track is bonded with three 4/0 rail bonds; one rail double bonded, with the second rail single bonded. The trolleys, feeders and track bonds are extended once a week, when the secondary track is extended, as described in a preceding paragraph.

Operating Performance

Our measure of performance efficiency is based on "tonnage per month" for the mine which, in the final analysis, is the only true gauge, and our aim therefore is to promote "team work" rather than to establish high shift production records from individual crews. Recent monthly tonnages have been more than 100,000 tons for the entire mine which has six loading machine units working on triple shift. The usual performance for a machine shift will average better than 300 tons or, say, approximately 1,000 tons per machine per day; a cut produces from 20 to 24 tons and each machine will normally load out from 12 to 15 places per shift. The rate of the development advancement measured along the direction of the main entries has averaged about 800 ft. per month during a recent period and since December, 1939, when the loading machines were put in operation, a total distance of 16,000 ft. of main haulways has been driven.



MANUFACTURERS' Forum

Fuse Crimper

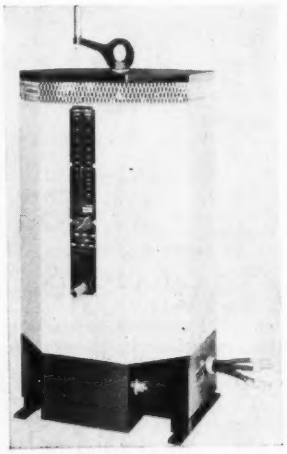
The du Pont Company, Wilmington, Del., has introduced a new bench-type crimper for crimping blasting caps on fuses. The crimp made by this machine is not like the ordinary sleeve or segment type. It consists of two smooth continuous internal beads on the throat of the cap. These beads grasp the covering of the fuse so closely that a waterproof seal is made without the use of a waterproofing compound. Exhaustive tests have demonstrated that the du Pont Superior Crimper makes a joint more waterproof than the fuse itself.

In operation the du Pont Superior Crimper is mounted on a bench and the freshly cut end of the fuse is inserted into the cap as far as possible. Then the assembly is pushed into the throat of the crimper until it stops. Operating the handle once makes two crimps simultaneously.

Wilson Transformer Arc Welders

A new line of a.c. transformer welders in 300-, 500-, 750- and 1,000-ampere capacities has just been announced by Wilson Welder and Metals Company, Inc., New York.

Known as Model TW, these welders



are completely self-contained units that will meet the heavy arc welding needs of shipyards, railroads and steel mills. For 220, 440 or 550 volts, 25- or 60-cycle current. When arranged for 220- and 440-volt operation, single phase, either voltage can be brought into use by a reconnection of the leads which are brought outside the unit.

The new welders have a wide range of current output and continuous stepless current regulation is provided over the entire range by means of a hand crank on top of the machine. This crank makes it possible to rapidly shift the setting as changes are made from one class of work to another.

The Model TW conforms to N. E. M. A. requirements, and is said to operate cooler and therefore last longer, because of divided construction of the coils which allows greater surface area to be exposed to the cooling air. All coil covering is spun glass fibre, heat-resistant, Class BB insulation, providing trouble-free operation even if used continuously at maximum settings.

New Model Pipe-Layer

Trackson Company, Milwaukee, has just announced a new Model MD6 Pipe-Layer . . . a tractor side-crane that mounts on the new "Caterpillar" D6 model and takes full advantage of the increased power built into this latest "Caterpillar" tractor.

The new MD6 Pipe-Layer has a lifting capacity ranging from 7,300 lbs. at 12 ft. overhang to 23,700 lbs. at 4 ft. overhang, and is one of a complete line of Trackson Pipe-Layers available with lifting capacities up to 67,000 lbs.

Although created primarily to handle the heavy lifting, carrying, lowering, bending and spotting of pipe, heavy equipment and materials on pipe-line jobs, these Herculean huskies are being used extensively on all sorts of heavy lifting and lugging jobs in Defense industries . . . around material yards, plants of heavy machinery manufacturers, mills, foundries, mines, etc.

Oil, Grease Gaskets and Rings Made of New Synthetic Rubber

Its new synthetic rubber, Ameripol, is proving the most satisfactory material yet developed for various forms of gaskets and rings assembled with machines to keep oil or grease confined in bearings, it is announced by The B. F. Goodrich Company, Akron, Ohio. These products are made by either the molded or lathe cut methods.

One of the largest firms specializing in this type of packings has reported, after thorough tests, that Ameripol is the best seal material they have ever used to resist petroleum derivatives. They report that it does not swell at all in gasoline at room temperatures, and that after immersion in oil for long periods it does not swell materially, and retains a high degree of flexibility and abrasion resistance.

Among other recent uses for Amer-

Big and Little in Bearings

The largest tapered roller bearing ever built by the Timken Co. is here shown compared to the smallest (in the hand of the employe). The large bearing is for installation on the back-up rolls of a 4-hi reversing hot mill in an aluminum company plant. The smallest is used in automobile generators.

ipol are lathe cut oil sealing gaskets for automobile steering columns, lathe cut gaskets for air lines handling oil-laden air, lathe cut rings used as a sealing part on a dry dust collector, and other molded seals for automobiles, washing machines and other equipment.

Paving Breaker Introduced

Ingersoll-Rand Company announces a new 60-lb. class "cushioned-air" paving breaker known as the CC-60, for hard clay shale, brick, concrete, or for jobs where it is not feasible to use a heavier tool. It is reported that this paving breaker is popular in many industrial plants where it is used for maintenance and "hard-to-get-at" jobs such as wall openings and foundation work. This tool has an air cushion which absorbs the blow of the piston when the steel is not in contact with the work. Consequently, there is far less fatigue for the operator and less breakage of parts. Although developed as a lightweight, easy-handling tool, the CC-60 because of its hard-hitting blow makes a fine machine for all-around paving breaker work.

Steelflex Coupling

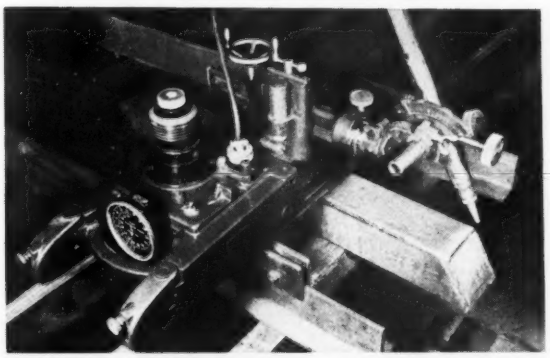
The Falk Corporation, Milwaukee, adds a new coupling to its line of Steelflex Couplings with the type P Piloted Coupling for floating shaft requirements.

The Falk Piloted Coupling is especially adaptable for use in paper mills, on steel mill auxiliary drives, on main rolling mill drives, horizontal and vertical pumps and exhaust draft fans.

This new coupling combines the resiliency and shock-cushioning section of the Falk General Duty Steelflex Coupling with a low-angle universal joint action, thus eliminating the necessity for an outboard bearing on extended shafts or auxiliary bearings on intermediate shafts. This feature makes possible a large saving in installation cost, space and foundation requirements for auxiliary bearings. The Piloted Coupling also allows greater flexibility in locating the driving and driven units.

The Falk Piloted Coupling is constructed entirely of steel. It consists of two hubs, one of which carries an integral flange to which the cover is secured, a special tempered steel member forming a complete cylindrical gridmember and flanged steel cover secured to the hub flange with capscrews.

Holder For Cutting Torch



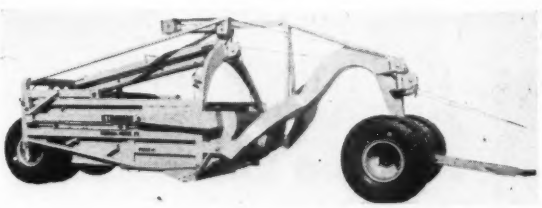
Extra convenience and accuracy in setting radiagraph cutting torches for any desired angle of cut is now made possible by a new Protractor Type Torch Holder, just introduced by Air Reduction Sales Co., New York City. As an example of the type of work for which the accuracy and time-saving features of the new holder are particularly valuable, a bevel-cut billet is shown in the photograph. A circular knurled knob permits angular adjustment, as shown on the scale. The new holder, which has a 90-degree angle range, can be attachd to any standard Airco Radiagraph.

New Double Bucket Carryall

Designed to give increased yardage with D8 tractor power, R. G. LeTourneau, Inc., Peoria, Ill., has introduced the Model FU Carryall cable-controlled scraper, a patented double-bucket model carryall with a struck capacity of 17.7 and a heaped capacity of 23 cu. yds.

Because of this patented double bucket design, loading is made easier and capacity increased. The Model FU can be used behind the standard D8 tractor and loaded either with or without a pusher. This ability to work efficiently either with or without a pusher tractor makes this machine a valuable all-around unit adaptable either to long or short hauls and operation singly or in fleets.

LeTourneau's patented double-bucket feature incorporated in the Model FU gives the effect of loading two small carryalls one after the other. The rear bucket telescopes forward and is loaded separately. After the first bucket is loaded to capacity, it travels back on rollers and roller bearings instead of being forced back,



thus reducing loading resistance and giving larger possible loads for expended tractor effort. The second or front section of the bowl is then easily heaped high with the D8 tractor power. By this unique method of loading into one bowl and rolling it back, bowl length is expanded and capacity increased.

Non-Slip Footwear Especially Designed for Mining Industry

A new type of footwear with patented non-slip sole to halt accidents has been especially designed for the mining industry by United States Rubber Company.

Known as the Sperry Top-Sider, the unusual sole was originated by Paul Sperry, an experienced yachtsman, to insure safe footing on the most dangerous decks. It is in very wide use today in the sailing world.

On the straight-away this sole is perfectly smooth, and being made of pure white rubber leaves no mark on any surface. In action thousands of small rubber waves open up to create a squeegee effect.

Because of the wide acceptance by yachtsmen, U. S. Rubber believed the sole might have extensive application in industry. A short line has been introduced which includes an all-white patrol rubber, an all-white Terre Haute, a light, short boot, hip-length boot, and special marine boot.

Other types are expected to be developed as a result of a continuing study of industrial needs in this line. U. S. Rubber has asked that all companies who have special problems with damp, oily or other slippery surfaces submit them for consideration.

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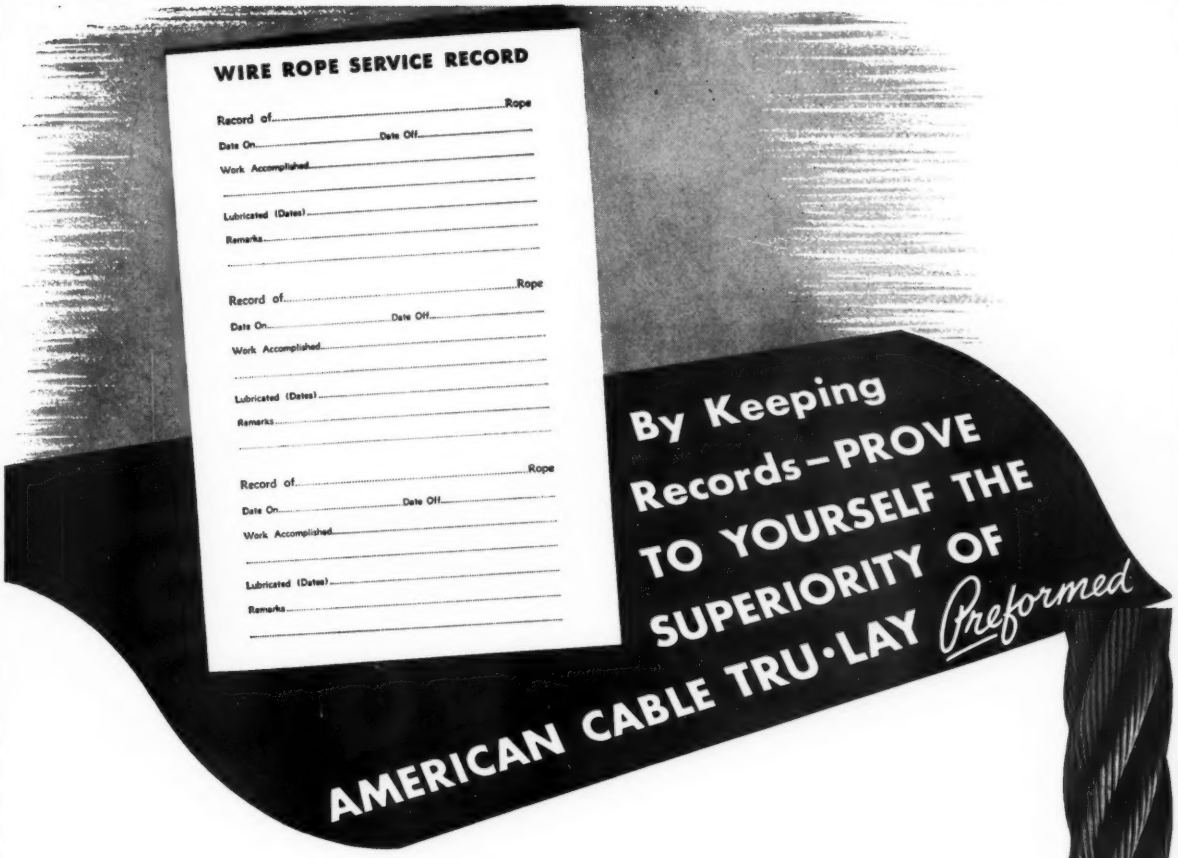

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